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BY
W. L. SCHULZ
Trade Commissioner



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LETTER OF SUBMITTAL.

DEPARTMENT OF COMMERCE,
BUREAU OF FOREIGN AND DOMESTIC COMMERCE,
Washington, August 12, 1920.

SIR: Submitted herewith is a commercial handbook of Paraguay, by W. L. Schurz, a trade commissioner of this Bureau, who spent several months in the country and made a thorough study of its natural resources, development, commerce, and industries. The work is designed for use of American business men, and is the first of a series of similar publications that the Bureau expects to issue on South American countries.

Mr. Schurz acknowledges assistance received and expresses his thanks to the American consul, Henry M. Balch, and the following persons, who supplied information and in some cases furnished facilities for traveling: Dr. Eusebio Ayala, Minister of Foreign Affairs; Evaristo Acosta, director of the Banco Agrícola; Venancio Galeano, Deputy in the National Congress; Manfredo Russo, Director of the Bureau of Statistics; Genaro Romero, Chief of the Office of Lands and Colonies; Federico de Gasperi, Chief of the National Department of Engineers; Eduardo Schaerer, former President of the Republic and now President of the Senate; Antolín Irala, National Senator; Juan Francisco Pérez, secretary to the Minister of Education and director of the Instituto Paraguayo; Albino Mernes, Intendant of the City of Asuncion; Reinaldo Bibolini, manager of La Industrial Paraguaya; José Rodríguez Alcalá, secretary of the Chamber of Commerce; Carlos Santos, Chief of the Tribunal of Accounts; Col. Mendoza, Commander of the Military Zone of Encarnación; and Dr. Rodolfo Ritter, editor of El Economista Paraguayo.

Respectfully,

Roy S. MACELWEE,
Director of Bureau.

To Hon. J. W. ALEXANDER,
Secretary of Commerce.

UNITS OF MEASURE AND VALUE USED IN THIS WORK.

| Measures. | Unit. | Equivalent. |
|-----------------------------|--|--|
| Weight..... | Kilo..... Pound..... | 2.2 pounds. .45 kilo. |
| Volume, liquid..... | Liter..... Gallon..... | .264 gallon. 3.785 liters. |
| Length of distance..... | Meter..... Foot..... Kilometer..... Mile..... | 39.37 inches. .3048 meter. .62 mile. 1.6 kilometers. |
| Area..... | Hectare..... Acre..... Square league..... | 2.47 acres. .404 hectare. 1,875 hectares. 4,632 acres. 7.2 square miles. |
| Value. | Symbol. | Value in United States gold. |
| Paraguayan peso, paper..... | c/l..... | \$0.05. |
| Argentine peso, paper..... | m/n..... | .4246. |
| Argentine peso, gold..... | o/s..... | .9648. |
| Uruguayan peso, gold..... | o/u..... | 1.0342. |

Wherever values are expressed in Argentine pesos, without further designation, reference is made to the paper peso. The value of the Paraguayan peso fluctuates considerably, but during the latter part of 1919 it was equivalent to about \$0.05.

Statistics of foreign trade are expressed in gold pesos and are designated as either "customs values" or "real values." In the former case the figures represent the values used in assessing the customs duties; in the latter case they represent an approximation to the actual market values.

PARAGUAY: A COMMERCIAL HANDBOOK.

INTRODUCTION.

Paraguay, one of the smallest Republics in South America, is surrounded by the three largest. To the east and north is Brazil; to the north and west is Bolivia; and on the east, south, and west is Argentina. Its capital, Asuncion, lies at an almost equal distance from the Brazilian coast to the east and from the River Plate to the south.

The River Paraguay divides the country into two quite distinct areas. In fact, it is doubtful if any river in the world forms the boundary line between two regions so different in almost every respect—topography, soil, plants, people, and industries. To the east of it lies the true Paraguay, a real geographical entity, whose frontiers are formed by rivers and mountain chains. Eastern Paraguay has an area of some 65,000 square miles, or somewhat less than that of the State of Missouri. Most of the life of the Republic is concentrated within this territory, and the history of the nation is the story of the development of the Hispano-Guarani nationality in this land between the two great rivers. West of the Paraguay River lies the Chaco, a vast region little explored and ill defined. Its area is frequently put at 100,000 square miles, but any figures on its extent must be purely arbitrary, since no surveys have been made nor have the limits of the Paraguayan Chaco with relation to Bolivia ever been determined.

The outstanding physical characteristics of the different natural divisions of Paraguay are well shown in a chart drawn by Dr. Moises Bertoni, the foremost scientist in that country. Dr. Bertoni divides eastern Paraguay into two sections—the region comprehended within the drainage area of the Paraguay and the "Great Forest," or Caaguazu, most of which lies to the east of the watershed between the Paraguay and the Alto Parana, though in places it reaches across the divide into the basin of the Paraguay.

The following table gives the general physiographic and meteorologic characteristics of the country:

| Zones. | General level above sea. | Rainfall. | Average temperature. | Average humidity. | Geological formation. |
|----------------------------|-----------------------------------|----------------------------------|---------------------------|-----------------------------|-------------------------|
| Chaco..... | Meters. 80-180 (av., 130)..... | Meters. 1.13 | *F. 73 | Per cent. 65 | Pleiocene-Tertiary. |
| Paraguay River region..... | 70-300 (av., 180)..... | 1.60 | 72 | 75 | Tertiary and secondary. |
| Great forest..... | 100-500 (av., 320)..... | 2.00 | 72 | 85 | Secondary and eozolic. |
| Zones. | Composition of rocks. | Dominant soil. | Characteristic trees. | Topography. | |
| Chaco..... | Argillaceous... | Clay and sand..... | Quebracho and black palm. | Flat. | |
| Paraguay River region..... | Quartzitic..... | Sand, containing iron and humus. | Cedro and mbocaya palm. | Undulating. | |
| Great forest..... | Basaltic..... | Clay, containing iron and humus. | Yerba and pindo palm. | Undulating and mountainous. | |

GEOGRAPHY.

Eastern Paraguay is a rolling or undulating country, rising from either of the two great rivers to the divide of the Amambay-Caaguazu system of hills. A large part of it is still wooded with virgin forest, interspersed with tracts of open country. Between meridians 58 and 57, about 25 per cent of the country is forested; between 57 and 56, about 60 per cent; between 56 and 55, about 95 per cent, and east of 55 fully 99 per cent. Lands in Paraguay are classed either as "monte" or as "campo"—that is, forest land or agricultural and pastoral land—although there is a third class, known as "bañados," or "bathed lands." The latter consists of river bottoms that are subject to inundations.

Although the different parts of the orographical system of Paraguay are locally known as cordilleras and sierras, these highlands are rather hills than mountains, as the term would imply. Their height is generally between 1,000 and 1,500 feet, though there are a few outstanding cerros of 1,800 to 2,000 feet. Most of the ridges are thickly covered with a growth of monte, or virgin forest. In the northern part of the Republic, the Cordilleras of Amambay and Mbaracayu are prolongations of the Brazilian system. The range of the Quince Puntas branches off to the westward from the former chain and closely parallels the Rio Apa sector of the border as far as the Paraguay River, and even enters the Chaco about Puerto Casado. At about the twenty-fourth parallel the Cordillera of Mbaracayu turns eastward at right angles to that of Amambay, and where it reaches the Alto Parana it forms the series of 18 great cataracts of the Guayra.

Southward from the angle formed by the Amambay and the Mbaracayu Ranges extends what is virtually a prolongation of the former and which is known as the Cordillera of Caaguazu. This is not a continuous chain, but a broken series of hills, with no general direction and with many offshoots and ramifications. One of these breaks off near Villa Rica, as the Cordillera of Ibituruzu, to become the Sierra de los Altos in its western part. These in turn send off secondary chains of hills to the north, west, and south. The railroad into Asuncion follows the valley between two of these ridges by Lake Ipácarai. Another, a succession of disjointed knots of hills, extends south into the Misiones region.

The country to the west of the central divide may be further classified as follows: In the northwestern part the land is very broken and sparsely settled, and is occupied by large cattle estancias like that of the Société Fonciere. To the south of this district is a lower-lying and more wooded country, with several considerable centers of population, the largest of which is Concepcion. The territory within a radius of about 60 miles around Asuncion comprises a very thickly settled belt and the most highly developed section of Paraguay. Two roughly parallel zones of fairly well-populated country extend a little east of south from the neighborhood of Paraguarí down to the Parana River. One of these is the fine Misiones country, once the seat of the Jesuit power, but now greatly hampered by lack of communications; and the other is a belt running along the railroad through Villa Rica to Encarnacion.

If a line were drawn in a slightly southeastern direction from the Apa to the Alto Parana, passing through Horqueta, San Estanislao, and Colonia Hohenau, the country to the east of this line would include the most undeveloped portion of the Republic, except, of course, the interior of the Chaco. There are probably not more than 25,000 inhabitants in all this region, which comprises considerably over half the area of eastern Paraguay. For all practical purposes most of this country is farther from the capital than is Buenos Aires. In the southwestern part of the country is a triangular region, lying between the Parana and the Paraguay Rivers and the hills of the Misiones, consisting of wide expanses of low, swampy lands, like the esteros of Neembucu and Bellaco, among which sluggish rivers find their way out into the Parana or the Paraguay. Here and there are areas where cultivation is possible. This region is admirably adapted to rice and other cultures demanding the soil conditions found here, though it suffers from exposure to the chilling winds that blow out of Argentina. At present it is largely given up to cattle raising.

THE PARAGUAYAN CHACO.

The Chaco is a vast territory of unknown area lying between the Paraguay and the Pilcomayo Rivers, the latter separating it from the Argentine Chaco, a region of similar natural characteristics. It extends northward to the Cordillera of Chochis and northwest to the mysterious River Parapiti and the foothills of the Tarija mountain system. In all this expanse there is no natural feature that might serve as a practicable boundary between Paraguay and Bolivia, both of which lay claim to the entire region, one down to opposite Asuncion and the other up almost to Santa Cruz de la Sierra. Thus, maps made in Paraguay represent the Chaco as exclusively Paraguayan territory, and vice versa in the case of those made in Bolivia.

Several attempts have been made to bring about a settlement of the boundary question, but the treaties drawn up by plenipotentiaries of the two countries have failed of ratification. Meanwhile the settlement and development of the disputed region, particularly of the northern part of the Chaco, must await the establishment of a definite frontier. No concession or land title within that territory can be sound until the question of the nationality of the land is settled. An American who attempted to found a colony in the disputed area has experienced the practical results of this condition. Bolivia, since the result of the war with Chile cut her off from a national outlet to the Pacific, has become all the more insistent on her rights to a place on the Paraguay River, which would give her access to the Atlantic through the River Plate. The effect has been to aggravate the seriousness of her boundary dispute with Paraguay. However, Paraguayan forces have occupied since 1886 Puerto Pa-checo, or Bahia Negra, the logical outlet for eastern Bolivia, while a simultaneous movement by Bolivia down the valley of the Pilcomayo has been taking place. The largest factor in preventing an armed conflict between the contesting nations has probably been the fact that the settled portions of these countries are located so far from the disputed region.

Although the Chaco has been arbitrarily parceled out in lots to individuals and land companies, many of these proprietors have never seen their holdings, nor could they identify them in case they did see them. Actual settlement has only proceeded in a narrow zone along the Paraguay River, where there are a few quebracho extract plants, as at Puerto Pinasco, and cattle estancias, or agricultural colonies, as at Villa Hayes. Most of the vast interior is still a tierra incognita, which explorers have been deterred from penetrating by fear of Indians or the uncertainty of the water supply. In fact, the northern part of the Chaco has not been crossed since the early part of the sixteenth century, when Ayolas and Irala succeeded in reaching Peru by that route. Cattlemen have ridden into the interior from the Paraguay, and surveyors and prospectors have at times penetrated inland for a considerable distance, but the region lying north of the twenty-second parallel remains largely an unknown land. Below that latitude the physical details of the country are much better known.

In general, the Chaco has the character of a vast plain with a very slight slope from the northwest. Most of its surface consists of extensive and parklike savannahs, whose monotony is broken by tracts of forest land in which the valuable *quebracho colorado* is prominent. Straggling clumps of palm trees are also common. Geologically speaking, the country is very young in contrast to eastern Paraguay, which is of very old formation. Everything appears to indicate that at a not very remote epoch the Chaco was the bed of an inland sea. Most of the water found there is still saline, and much of it is too salty for cattle to drink, though, when the percentage of salt is not excessive, it frees cattlemen from the necessity of putting out salt for their herds.

The almost absolute flatness of the Chaco accounts for the liability to inundations. An unusually heavy local rainfall or heavy precipitation in the back country may leave a wide area flooded to a depth of several inches, or even deeper. The declivity of the land is not sufficient to carry off the water rapidly, and the saturation of the subsoil does not allow it to be absorbed by the ground. Consequently it is only by evaporation and by the slow process of draining off into the rivers that the land is freed of the water. The prevailing heath-like surface is occasionally broken by slight rises of ground, which serve as places of refuge for cattle in times of heavy inundation. The most serious floods that occur in the Chaco are caused by the rising of the Paraguay, when the backwater from the river is likely to inundate the country for several miles inland from the main stream. The flood of 1904 drowned considerable numbers of cattle, but few were lost from the flood of June, 1919, due largely to the greater vigilance of the owners. Serious floods are of rare occurrence, and the rise is so gradual that precautions can be taken in time to prevent loss of stock. At intervals along the river are elevations above the flood level, to which cattle can be driven. These places are broken spurs of the orographic system of eastern Paraguay which were left in the Chaco by a change of the river's course.

RIVERS.

The three principal rivers of the country, in the order of their importance, are the Paraguay, the Parana, and the Pilcomayo.

PARAGUAY RIVER.

The Paraguay, within reach of which most of the life of the country is concentrated, rises in the Brazilian State of Matto Grosso, in a marshy region known as the Sete Lagoas, from which the Tapajos also flows north to the Amazon. Thence the Paraguay flows southward past Corumba and the terminus of the Sao Paulo Railway at Porto Esperanca, until when near Puerto Sastre it becomes an exclusively Paraguayan stream. It continues such until its junction with the Pilcomayo, whence its left bank is in Argentine territory. At Paso de la Patria, a few miles above Corrientes and about 1,800 miles from its source, the Paraguay makes its confluence with the Alto Parana. During its course through Paraguayan territory it averages about a quarter of a mile in width, though this by no means represents its extreme. Except at wide intervals the Chaco shore is always low, while there are extended stretches of comparatively high banks on the left side of the river, especially where, as in the neighborhood of Asuncion, the river skirts the edge of the system of hills that rise toward the interior of the country.

The Paraguay receives a number of tributaries on its left side. Some of these, such as the Apa and Aquidaban, are too swift and broken by rapids to be navigable on a commercial scale. Of much greater importance is the Jejuy, with its network of branches. Large steam launches can ply over most of the length of this river and on its affluents, while numerous "chatas," or flat-bottomed boats, bring out the yerba and other products of the interior by this waterway. In the same class are the Ipane in the northern and the Tebicuary in the southern part of the Republic. After rising in the Cordillera of Mocoti, the latter river flows in a general westward direction by a most tortuous channel. Much of its course lies among the esteros or swampy lowlands of the southwest.

The rivers and riachos (creeks) of the Chaco are sluggish, rambling streams, with suggestive names like Negro, Confuso, Maldito, and Perdido. As in the case of the Pilcomayo itself, the true course of the Confuso has long been a matter of controversy, some alleging that it was an arm of the Pilcomayo, which was sent off on the latter's passage through the vast unexplored morass known as the Estero of Patino, while others have contended that it is an entirely independent stream. Though some of the rivers of the Chaco are navigable by launches for a few miles from their junction with the Paraguay, none of them are of importance for navigation on a commercial scale.

PARANA RIVER.

The Parana rises in the plateau region of the Brazilian State of Goyaz and thence to the mouth of the Uruguay has a length of about 2,000 miles. From its source to the Guayra Falls, where it reaches the Paraguayan frontier, it runs about 665 miles. Thence to

the Iguazu is a second stage of 210 miles and from the mouth of the Iguazu to Corrientes another of 492 miles. These three sections comprise the Alto Parana, and the remaining 676 miles constitute the true Parana to the point where it joins the Rio de la Plata. To about latitude 27° S. the Alto Parana runs parallel to the Paraguay. It is then diverted to the westward by the hills of the Argentine Misiones, and in about longitude 58° 40' receives the waters of the Paraguay, or, as Paraguayans contend, empties into the Paraguay.

In its southward course the Alto Parana receives many tributaries on the Paraguayan side, the largest of which are the Acaray and the Monday. Although over part of their length they serve for relaying yerba shipments on their way down to the Parana, they are generally too swift and dangerous to serve as dependable highways of trade. In their lower reaches several of these streams are broken by cataracts, which represent enormous reserves of hydroelectric power against the indefinite future when it may become practicable to utilize their potential force. They are at present situated in a wilderness which is in a primitive state of development. The same is true of the fine Cataract of the Iguazu, which is on the Argentino-Brazilian border a few miles east of Paraguayan territory, and of the Guayra Falls, which probably represent the largest store of latent electrical power of any waterfall in South America.

The Parana, although navigable for small-draft steamers to Porto Mendez, the terminal of the railway around the Guayra Falls, is a swift-flowing stream with a channel that requires careful pilot work to keep clear of the reefs at certain points in its course. In its lower reaches below Encarnacion the Alto Parana is a broad, slowly flowing river, though at the Salto de Apipe near Ayolas its smooth current is interrupted by rapids.

PILCOMAYO RIVER.

The Pilcomayo, the third of these rivers, originates in the mountains of southern Bolivia, and from about latitude 21° S., where it enters the Chaco, it follows a general southeastward direction, until it empties into the Paraguay almost directly opposite Asuncion. Although its upper and lower stages are fairly well known, much of its middle course is still untraced. Many explorers, operating from either end, have tried to follow the course of this river, but all have failed, and the Pilcomayo still remains for part of its length a river of mystery. The principal obstacle to the exploration of the Pilcomayo has been the vast expanse of swamp known as the Estero of Patino, where the river disappears for a long distance in a maze of shallow, impassable lagoons.

Any project for utilizing the Pilcomayo for navigation, except in its lower extent, is entirely impracticable. Snags, rapids, lack of sufficient depth for boats, and the presence of hostile Indians are some of the difficulties that attend operations on this river. In fact, it would be hard to find another river of its length that is so useless for commercial purposes.

CLIMATE.

Paraguay lies athwart the Tropic of Capricorn, which passes through the city of Concepcion, and therefore has a climate that partakes of the characteristics of both the Torrid and the Temperate Zones.

Its climate is, in fact, a composite of the two opposing influences represented by the prevailing winds. One of these, always hot and generally humid, blows from the north out of the Brazilian State of Matto Grosso; the other is a cooling south wind, usually dry, from off the Argentine plains. The resultant is a climate that is essentially subtropical.

The average temperature throughout the year varies between 70° and 74° F., and the difference between the mean summer and winter temperatures is about 43°. In the summer months—that is, December, January, and February—the temperature may rise to 106°, but in some years may not exceed 98°. The minimum winter temperature—that is, for the months of June, July, and August—will vary over a number of years between 33° and 42°, but in districts back from the rivers it will sometimes fall below freezing. It may be said that about 100 days in the year are excessively hot, between 30 and 40 uncomfortably cool, and the remainder of the year can be considered pleasant.

The climate is subject to sudden changes of temperature. Thus, after several days of hot winds from the north, with increasing humidity to the point of saturation, there may ensue, after a short interval of calm, an abrupt shifting of the wind to the south. This change of wind brings rain, often a torrential downpour, amounting to perhaps 5 or 6 inches in a few hours, and is quickly followed by a considerable drop in the temperature. It may fall 10° or even 30° within four or five hours. While it is invigorating to the individual, the cooling south wind is sometimes destructive to crops, as the frosts which are likely to follow in its wake may ruin the year's crop of sugar cane or of other plants unable to resist the low temperature.

It may also happen that the north winds do not bring the customary supply of moisture, due to a lack of water in the low-lying parts of Matto Grosso, from which they blow. In this case the degree of saturation is not sufficient to cause precipitation, even with a radical drop in the temperature. When prolonged for several weeks this condition results in a drought, which may be disastrous to certain crops. However, the country is generally assured of an adequate rainfall and one that is well distributed over the year, although an occasional drought and damaging frost are eventualities which must be considered in any estimate of the agricultural possibilities of the country. The average rainfall in the region of Asuncion is about 60 inches a year. It is higher in the eastern part of the country, reaching its maximum near the mouth of the Monday River, and is lowest in the Chaco, where in some years there are long periods without rain.

The long summers are trying to those who come from more temperate countries. During the hot months the siesta is almost obligatory, and business houses in Asuncion provide for it by closing for three hours during the middle of the day. The north wind constitutes the most disagreeable feature of the Paraguayan climate. It has a peculiar influence on the nervous system, either highly irritating or depressing, according to the temperament of the individual. It is an interesting fact that an undue proportion of the crimes are committed while this wind is blowing. However, the enervating effect of this wind and of the summer heat in general is moderated by the invigorating influence of the south wind, which can gen-

erally be depended upon to relieve the overheated and oversaturated atmosphere after a period of discomfort. Cases of sunstroke are very rare in Paraguay.

There are no endemic diseases in the country that need concern a foreigner. Except in certain low-lying districts, there is little malaria, or "chu-chu" fever, as it is locally known, and pulmonary diseases are rare. Digestive complaints are probably the most common ailments to which foreigners are subject. Those persons endowed with a normal constitution and who pay reasonable attention to diet and take the necessary precautions against the sudden changes in temperature can expect to enjoy satisfactory health in Paraguay. Capable foreign-trained physicians can be found for those who fall ill, at least in Asuncion.

The following tables will illustrate the variations in temperature, atmospheric pressure, and rainfall at Asuncion over the period 1915 to 1917:

TEMPERATURE.

| Month. | 1915 | | | 1916 | | | 1917 | | |
|----------------|-------|------|------|-------|------|------|-------|------|------|
| | Max. | Med. | Min. | Max. | Med. | Min. | Max. | Med. | Min. |
| | °F. | °F. | °F. | °F. | °F. | °F. | °F. | °F. | °F. |
| January..... | 104.9 | 82.4 | 64.0 | 104.0 | 80.7 | 60.8 | 110.3 | 86.0 | 57.2 |
| February..... | 106.0 | 84.7 | 70.4 | 98.6 | 80.0 | 59.0 | 104.0 | 82.2 | 60.8 |
| March..... | 99.5 | 77.3 | 55.0 | 102.2 | 77.0 | 55.4 | 108.0 | 80.2 | 56.3 |
| April..... | 99.0 | 77.9 | 59.0 | 99.5 | 78.5 | 53.6 | 96.0 | 70.8 | 46.4 |
| May..... | 94.6 | 73.0 | 46.4 | 93.2 | 70.5 | 51.8 | 86.0 | 62.4 | 39.2 |
| June..... | 86.3 | 57.3 | 34.1 | 86.0 | 54.5 | 35.6 | 84.2 | 64.7 | 39.7 |
| July..... | 92.6 | 65.6 | 33.8 | 91.4 | 59.6 | 34.7 | 81.1 | 62.7 | 41.0 |
| August..... | 98.2 | 70.0 | 44.6 | 91.4 | 70.5 | 41.0 | 94.6 | 66.5 | 35.4 |
| September..... | 100.0 | 69.0 | 42.8 | 104.0 | 76.4 | 37.4 | 100.9 | 76.8 | 44.9 |
| October..... | 103.0 | 74.1 | 53.6 | 103.0 | 75.9 | 50.9 | 95.0 | 73.0 | 50.0 |
| November..... | 104.3 | 75.9 | 56.3 | 105.8 | 80.6 | 53.6 | 100.7 | 78.0 | 47.3 |
| December..... | 105.8 | 81.0 | 54.5 | 108.5 | 81.0 | 55.4 | 105.0 | 84.7 | 63.4 |

BAROMETER.

| | Mm. | Mm. | Mm. | Mm. | Mm. | Mm. | Mm. | Mm. | Mm. |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| January..... | 761 | 757 | 754 | 763 | 759 | 757 | 759 | 755 | 752 |
| February..... | 761 | 759 | 756 | 764 | 760 | 758 | 762 | 757 | 753 |
| March..... | 764 | 758 | 754 | 766 | 763 | 757 | 763 | 760 | 757 |
| April..... | 763 | 758 | 754 | 766 | 763 | 758 | 766 | 762 | 756 |
| May..... | 764 | 758 | 752 | 769 | 764 | 758 | 768 | 764 | 758 |
| June..... | 769 | 764 | 758 | 772 | 764 | 756 | 767 | 764 | 760 |
| July..... | 774 | 763 | 757 | 771 | 766 | 762 | 768 | 764 | 760 |
| August..... | 767 | 762 | 754 | 769 | 765 | 761 | 769 | 764 | 760 |
| September..... | 770 | 762 | 757 | 770 | 762 | 758 | 766 | 760 | 755 |
| October..... | 765 | 760 | 754 | 767 | 760 | 751 | 763 | 761 | 758 |
| November..... | 764 | 761 | 756 | 760 | 755 | 761 | 764 | 760 | 757 |
| December..... | 768 | 760 | 757 | 761 | 756 | 752 | 763 | 757 | 753 |

RAINFALL.

| Month. | 1915 | 1916 | 1917 | Month. | 1915 | 1916 | 1917 | | | | |
|--------|------|------|------|---------------|-------|-------|-------|----------------|-------|------|-------|
| | | | | | Mm. | Mm. | Mm. | | | | |
| | | | | January..... | 154.1 | 304.2 | 58.7 | July..... | 7.7 | 92.3 | 36.3 |
| | | | | February..... | 56.5 | 156.1 | 32.0 | August..... | 25.1 | 17.9 | .6 |
| | | | | March..... | 229.7 | 80.1 | 124.2 | September..... | 56.6 | 9.5 | 125.8 |
| | | | | April..... | 201.5 | 84.5 | 222.2 | October..... | 82.6 | 45.7 | 113.6 |
| | | | | May..... | 174.8 | 276.7 | 51.3 | November..... | 129.5 | 38.5 | 73.0 |
| | | | | June..... | 8.8 | 88.0 | 41.2 | December..... | 161.0 | 88.1 | 162.2 |

The Government maintains a meteorological station at Trinidad, in the outskirts of Asuncion. This station is directed by a competent

foreign scientist and is under the administrative control of the Banco Agricola, in whose annual report a detailed record of the year's weather is published.

HISTORY.

When the Spaniards entered the land between the Paraguay and the Paraná Rivers in the early sixteenth century, they found the country occupied by a number of Indian tribes, who, although differing greatly in customs, possessed a common speech, or *lingua franca*, with which they communicated with each other. This was the Guarani, which became the badge of the Paraguayan race, as its kindred tongue, the Tupi, became that of the natives of much of Brazil. Between 1526 and 1528 the expeditions of Alejo Garcia and Sebastian Cabot, or Gaboto, as he was known in the Spanish service, entered the Paraguay River in their efforts to reach Peru. However, the real settlement of what was to be the Province of Paraguay dates from 1536, when Juan de Ayolas brought the remnants of Mendoza's ill-fated colony up the river from the abandoned site of Buenos Aires and laid the foundations of Asuncion. The motives of the transfer were the obtaining of food from the agricultural Indians of the region and the founding of a way station on the way to Peru, which was the ultimate objective of all these expeditions. Though momentary connections were formed with Peru, the colony quickly came to depend on its own resources, and even in political affairs its dependence on the viceroy of Peru remained very shadowy. In its early years the colony was fortunate in being directed by two strong personalities, Domingo Martínez de Irala and Hernando Arias de Saavedra, while among the first governors was Alvar Nuñez Cabeza de Vaca, one of the explorers of the southwest of the United States.

After a period of wars the Indians succumbed to the Spaniards and miscegenation began on a large scale, resulting in the creation of the modern Paraguayan race, in much the same way that the Chilean race was formed by the mixture of the Spaniard and the Araucanian.

One of the most notable features of the colonial period was the establishment of the Jesuit rule over a large part of the Province. This powerful religious order began operations in Paraguay in 1609 and soon gathered within its "reductions," or great mission establishments, thousands of natives. These Indians were subjected to a civilizing régime after the Jesuit model, and were initiated into the more rudimentary arts of peace. However, they were subjected to a strict measure of control of their private lives that gradually deprived them of whatever individual initiative they may have possessed and left their race ready material for the dictatorships which followed the foundation of the Republic. The Jesuit establishment grew too independent and prosperous for the liking of the lay power, and in 1767, during the governorship of Carlos Murfi, or Charles Murphy, a royal decree ordered the expulsion of the powerful order from all the Spanish colonial dominions, including, of course, Paraguay. The missions were then broken up and the Indians left to their own resources.

FOUNDING OF THE REPUBLIC.

In 1811, by a bloodless revolution, the colony separated from Spain and set up as an independent Republic. After a few years of experimenting with government by juntas, or committees, the country came under the control of a dictator, José Gaspar Rodríguez de Francia, and remained under his absolute domination from 1816 to 1840. The rule of Francia is described in the novel entitled "El Supremo," written by Edward Lucas White, on the basis of the contemporary letters of the Robertson brothers.

In 1844 began the period of the Lopez rule, which was to end with the death of the second Lopez in 1870. The results of the dictatorship of Carlos Antonio Lopez were in the main very beneficial for the country. Roads were laid out, many reforms were instituted, and, in reaction from Francia's policy of isolation, Paraguay was opened to the outside world, the first foreign trading vessel reaching Asuncion in 1852. It was during this period that an American war vessel, the *Water Witch*, while reconnoitering the river system of the country in the interests of geodetic knowledge, had a brush with a Paraguayan fort on the Alto Parana, thereby creating a diplomatic controversy that was, however, easily cleared up.

THE WAR OF 1865 TO 1870.

The work of the first Lopez was swept away in the war which was provoked by the ambitions of his successor, Francisco Solano Lopez. The latter, although possessing some advanced ideas in regard to the material needs of his country and a certain amount of education gained in European travel, desired to create an empire in the heart of South America around Paraguay as a nucleus. He provoked Brazil into war, and by invading the Province of Corrientes in an effort to reach the southern States of Brazil brought the Argentine Republic into the conflict. The adhesion of Uruguay to the enemies of Lopez completed the formation of the Triple Alliance, which, by sheer force of numbers and the possession of a navy, finally broke down the desperate resistance of the Paraguayan armies, then the best in South America. Even allowing for the terrorism by which Lopez attempted to maintain discipline in his forces, the heroism of the Paraguayans must be granted. The war began in 1865, and it was not until 1870 that Lopez was killed along the Aquidaban and the struggle ended.

It is doubtful if any modern war has been so disastrous to a nation. The territorial cessions which Paraguay was forced to make pared down the country on all sides. On the north the claims of Paraguay to the land between the Apa and the Branco were relinquished in favor of Brazil, and Paraguay was compelled to cede some valuable yerba districts. To Argentina went the Misiones country on the left bank of the Alto Parana and the land between the Bermejo and the Pilcomayo. The total cessions amounted to over 56,000 square miles.

More serious than the territorial losses, however, was the loss of life and property. Almost the entire male population above the age of 15 had been forced into the armies, and these armies had been literally annihilated. To-day one sees few old men in Paraguay.

The noncombatant population was also decimated by the hardships to which it was exposed. Most of the large herds of cattle had been killed, and the country was otherwise denuded of the materials necessary for the work of reconstruction and, in fact, deprived of the very basis of subsistence. Whatever there is in Paraguay to-day dates from the end of the great war, built up from the wreckage of a nation that was all but destroyed. In any consideration of the present backward state of the country, that fact must be always kept in mind.

Questions connected with the war are still argued with great bitterness, and a busy Lopizta party maintains a propaganda in favor of the memory of the dictator and in justification of Paraguay's part in the war. This party alleges that Lopez was an unmitigated benefactor to his country and that in waging a war of defense against the aggressions of the Triple Alliance he died the death of a martyr.

Since 1870 the main problems of Paraguay have been the elemental one of repopulation, the establishment of real constitutional government, and the economic upbuilding of the country. The peculiar historical influences which have affected and still affect in a greater or less degree the national life are the following: The dual Guarani-Spanish racial heritage; the long isolation of the country from the rest of the world; the long subjection of the people to personal rule, whether of Jesuit priests or dictator-presidents; and the effects of the war of Lopez and of subsequent revolutions.

GOVERNMENT.

The National Government of Paraguay is based on a constitution which was drawn up in 1870 at the end of the war with the allies. Like most Latin American constitutions, this document borrowed many features of the Constitution of the United States, though, unlike the United States, Argentina, and Brazil, Paraguay is a centralized and not a federal Republic.

The head of the Government is a President, who is elected by an electoral system modeled on that in force in the United States. In official documents he is always referred to as the Executive Power (*Poder Ejecutivo*). Although constitutionally the President is endowed with much the same authority as is granted to the President of the United States, in practice the presidential prerogative may overshadow in ordinary times all the other branches of the Government. However, to guard against any assumption of arbitrary power such as the Lopezes exercised, the constitution expressly condemns attempts at dictatorship. "Dictatorship," it says, "shall be unlawful and inadmissible in the Republic of Paraguay, and anyone who may propose to establish it, or consents or subscribes to its establishment, shall be held to be an infamous traitor to the country, and liable, therefore, to the proper penalties and responsibility." As an additional safeguard, the President may be reelected only after an interval of eight years.

The President is assisted by a ministry of five members, who have charge of the following departments of administration: Foreign Affairs; Interior; Treasury; Justice, Worship, and Public Instruction; and War and Navy. The Fiscal General, who exercises the

functions of national attorney general, is not a member of the ministry.

LEGISLATIVE AND JUDICIAL AUTHORITY.

The legislative power is vested in a Congress composed of a Senate and Chamber of Deputies. In general its powers resemble those of the Congress of the United States, although, in the absence of state or provincial legislatures, it legislates on a number of subjects which are outside the sphere of the American Congress. One of its duties is "to provide for everything conducive to the prosperity of the country, and to employ, above all, every possible means of securing progress and the diffusion of public instruction." An interesting feature of the national legislature is the Permanent Committee of Congress, which sits during the intervals between the regular sessions of that body. The purpose of this provision is not only to provide for emergencies demanding legislative action, but to prevent usurpations by the Executive during the recess of the Congress.

At the head of the national judiciary is a Supreme Court of three justices. There are also two Superior Courts of Appeal, both civil and criminal, courts of first instance, and justices of the peace. An interesting judicial official is the "Defender General of the Poor and of Minors and Absentees."

ADMINISTRATIVE DISTRICTS—NATIONAL ARMY.

For administrative purposes the Republic is divided into "capital" and "campaña," or capital and country, and for electoral purposes is further divided into 23 districts. These are in turn subdivided into 93 "departamentos." The departments are administered by a *jefe político*, who is responsible to the Ministry of the Interior. There is little local self-government, except in the municipal councils, which have jurisdiction over petty local affairs, not only within the limits of the town or village proper, but for a considerable area roundabout. The central Government at Asuncion exercises close control over administration of the country districts, although even officials appointed from the capital may exercise considerable discretionary authority if their posts are located at a long distance from Asuncion, as in the regions along the Alto Parana.

The national army is theoretically based on a law of obligatory service, but the resources of the Government have not permitted the complete application of this law. The country usually has about 2,500 men on a war footing. The army has been trained on German principles. It can be said to the credit of Paraguay that it has been very moderate in the creation of high military titles, the possession of which in some Latin-American Republics has too often aroused in the bearer ambitions incommensurate with his abilities and destructive of the peace of the country. The Republic is divided into five military zones. The navy is limited to a few small vessels for the policing of the rivers.

DIPLOMATIC RELATIONS.

The Government has also wisely restricted the size of its foreign service to the actual needs of its interests abroad. Paraguay maintains representatives of ministerial rank at the following places:

Washington, for North America; London, for Europe; Montevideo, for Uruguay; Buenos Aires, for Argentina; Rio de Janeiro, for Brazil; and Santiago de Chile, for the west-coast countries. There are consuls general at Buenos Aires and Montevideo; consuls at London, Corumba in Brazil, and Posadas in Argentina; five vice consuls in the Argentine cities; and consular officers in a number of other places, including New York. In the latter city the office of the Paraguayan consular representative is located in the Woolworth Building. The United States has a minister, a consul, and a vice consul in Asuncion.

Although universal manhood suffrage prevails, the great majority of the Paraguayans take little active interest in political affairs. However, election returns for the past few years show an increased disposition on the part of the eligible voters to utilize their right to the franchise. Foreigners are permitted to vote in municipal elections, and a curious feature of Paraguayan law is the clause in the Constitution which declares that "all persons born in Paraguayan territory" are Paraguayan citizens.

POLITICAL PARTIES.

There are two principal political parties, styled, respectively, Liberal-Radical and Democratic, though known in popular parlance as "azules" and "colorados," or blues and reds. These parties do not represent clearly defined programs of political policy, but partake rather of the character of political factions, in which personal loyalty is the strongest force. As a consequence, there is little constructive legislation, though there are a number of men in politics with statesmanlike views and a proper conception of the functions of government. The leaders often show a surprising knowledge of theories of government, and are well versed in the principles of civil law and jurisprudence, but are likely to be weak on the side of administration. Although quick to show their patriotism when they believe the national honor at stake, there is a lack of positive civic sentiment and active public opinion.

Party feeling runs strong at times, and revolutionary tendencies are still latent in the political situation. Between 1871 and 1915 there were 26 of what one Paraguayan writer calls "alterations of the legal order"—that is, revolutions, coup d'états, and "cuartelazos," or barrack uprisings, while the "state of siege" was declared 23 times during the same period. The last serious disturbance took place in 1911-12, when the Minister of War took violent possession of the Government, and constitutional authority was restored only after some sanguinary fighting. An attempt against the Government on New Year's Day, 1915, proved a fiasco, owing to the determined stand of the President. Since then, although the chances of revolution can not be said to have passed altogether, the tendency to have recourse to arms for the settlement of political differences clearly appears to be on the wane. The people are coming to see the advantages of peace and order and the futility of revolutions, their leaders are more hesitant to appeal to "trial by battle," and all who have any property at stake, whether natives or foreigners, are determined on the maintenance of the processes of constitutional government.

RELIGION.

The population of Paraguay is predominantly Roman Catholic, though a large part of the male population is indifferent on matters of religion. Complete religious toleration is granted to all dissenting sects.

The ecclesiastical establishment of the Republic is relatively small. In 1916 it consisted of but 105 priests, 54 of whom were foreigners and 51 native Paraguayans. Of the former, 32 were regular priests and 22 secular. The introduction of French and Spanish priests has contributed materially toward raising the standards of the national church. A bishop, whose seat is at Asuncion, is the head of the Paraguayan clergy.

EDUCATION.

The Paraguayan Constitution declares primary instruction compulsory, yet, though it is impossible to obtain more than guesses on the subject, probably 60 per cent of the inhabitants are illiterate. The existing school facilities are utterly inadequate for the task of educating the masses, and although the Government declares that its resources do not permit the necessary reforms, the annual appropriation for the army is generally larger than that for public instruction. However, there is no doubt that the poverty of the country is one of the most serious obstacles to the necessary expansion of the school system. President Franco described the situation in his speech to Congress in April, 1919, as follows:

We are in the presence of a crisis in primary instruction, and it is necessary to take measures in time to combat it with all the means at our disposal.

In a population of about 800,000 the school registration for 1916 was 80,142, of which 76,923 were enrolled in the public schools and 3,219 in private schools. The corresponding figures for the four preceding years were: 1912, 49,240; 1913, 64,625; 1914, 71,324; 1915, 74,245. These figures do not represent more than a distant approximation to the actual daily attendance, which averaged considerably less. In 1916 there were 532 schools, of which 471 were public and 52 private, and there was a total of 1,481 teachers. There are six normal schools in the country, the principal of which are located at Asuncion and Villarica. The total registration in these normal schools at the end of 1918 was 268, ranging from 16 at Encarnacion to 101 in the capital. In the three public secondary schools at Asuncion, Villarica, and Pilar 756 students were enrolled in 1918.

Teachers are poorly paid, and there is no prestige attaching to the profession to compensate them for the small salaries. On account of the rising cost of living, teachers, especially the few men in the ranks, are disposed to abandon their work for more remunerative occupations. In spite of the work of the normal schools, of 1,322 public-school teachers in 1916 only 300 had certificates attesting their capacity to instruct. Many of them were scarcely literate and spoke Spanish with difficulty. Yet, against the most discouraging obstacles, a few trained and enthusiastic leaders are working to educate the people to at least a state of literacy.

EDUCATIONAL NEEDS OF COUNTRY DISTRICTS.

There is a lack of schools all over the country, but particularly in the country districts. In 1916 the Director General of Schools declared that 300 additional schools would scarcely fill the most urgent needs of the country, and that over 80,000 children of school age were receiving no instruction because of the lack of schools. During 1916 35 rural schools were closed because teachers were not available. Some of the large corporations operating in the Alto Parana region have established schools for educating the children of their employees, and the International Products Co. maintains a very good school at Puerto Pinasco.

The most serious educational need is for a widespread system of rural schools that will not only teach the elements of literacy to the country population but will give them instruction in agricultural methods and the manual arts. Such a system must be adapted to the peculiar needs of the Paraguayan rural population, just as the American schools in the Philippines were fitted to the conditions existing there. The Paraguayan school administration might, in fact, profit greatly from a consideration of the practical phases of the Philippine system. The industrial significance of the condition prevailing in Paraguay lies in the fact that an uneducated people produce little, because they are without the stimulus of ambition, and, since their standard of living is low, they consume little and represent a small buying capacity.

HIGHER INSTITUTIONS OF LEARNING.

The National University at Asuncion is divided into five different faculties. In 1918 the number of professors and students was as follows:

| Divisions. | Professors. | Students. |
|---|-------------|-----------|
| Faculty of law and social sciences..... | 13 | 132 |
| Faculty of medicine..... | 2 | 48 |
| School of the notariate..... | 6 | 32 |
| School of pharmacy..... | 7 | 16 |
| School of obstetrics..... | 2 | 24 |
| Total..... | 30 | 252 |

Though some of the leading men in public life give lectures at the university, laboratory and library equipment is lacking. In fact, the entire educational system is weak in the teaching of the sciences, whether pure or applied. Undue stress is also laid upon the training of lawyers, on account of the prestige attaching to the profession and because it is the usual gateway to political preferment.

The Government formerly granted a number of scholarships for study in foreign countries, and the recipients of these underwent a course of training in Buenos Aires or Montevideo, or in universities in the United States and Europe. Some young men have gone abroad to study on their own resources. These foreign-trained men, who have availed themselves of the opportunities to acquire a specialized education, are not only valuable aids in the development of the

country, but are strong factors in promoting a friendly feeling toward the country in which they are educated. If they are engineers, they will tend to favor the purchase of materials in that country.

There is a School of Commerce in Asuncion with a large registration, including nearly 600 students in night classes. It gives instruction in commercial geography and arithmetic, commercial law, accounting, and bookkeeping. Proper facilities for teaching stenography and typewriting are lacking. Yet, with a very limited equipment, this school is doing excellent work.

Probably the largest single force for purely cultural development in the country is the Instituto Paraguayo, a private organization with a large membership. It gives courses in English and French, music, physical training, and manual arts. The enrollment of students in all branches is about 500. An American school is about to be established in Asuncion.

The reports of the National Library do not show the existence of a large reading public. In 1916 only 296 books and 143 periodicals were consulted, or a total of 439, as against 658 in 1915 and 1,077 in 1914. Of those who used the library in 1916, 323 were Paraguayans and the remainder foreigners. A well-selected library of nearly 2,000 volumes in English and by American writers was recently donated to the Instituto Paraguayo by the Carnegie Peace Foundation.

Although there is a small group of scholarly men, there is little intellectual productiveness of a serious order, and the publication of a book is a noteworthy event. The few intellectual leaders lack the stimulus of a large reading public within the country and the geographical isolation of the country lessens the stimulating effect of outside influences. Moreover, the costs of publication are very high. Some creditable reviews have been published, but most of the periodicals are of ephemeral duration and interest. Though their news service is seriously hampered by the poor telegraphic connection with the outside world, evidences of sharp thinking and good writing are common in one or two of the leading newspapers of the capital.

POPULATION.

The total population of Paraguay is probably about 800,000, but, in the absence of a scientific census of the country, any figure of the population can be only a conjecture based on the vague evidence of appearances and probabilities. School registration and election returns are insufficient grounds for a computation of the general population, as is always any application of the so-called law of average increase of population.

The following official figures for four different periods can only be considered as approximations: 1857, census, 800,000; 1872, census, 231,000; 1887, statistical data, 329,645; 1899, statistical data, 635,571. These figures illustrate the general trend of population, especially as it was affected by the war with the allies, in which, according to most Paraguayan authorities, the country lost nearly half a million people. These losses by no means represent deaths in battle or from wounds, but include those who died from pestilence, starvation, and the other calamities incident to the war. It is probable that the population of the country has only recently recovered from the

decimation produced by that conflict. For a long time after the war women greatly outnumbered the men, but with the rise of a new generation the equilibrium between the sexes has been largely restored, although old women are still much more common than old men.

RACIAL COMPOSITION.

As for the racial composition of the nation, miscegenation proceeded so far during colonial times that absolutely pure whites are found only among the upper classes in the large towns and pure Indians only in the remotest districts of the interior. The greater part of the population consists of a blend of the two component races, whose mixture has constituted a real nationality. Though present, the negro element in the racial composition is insignificant.

The Spanish tradition in the country is represented by the descendants of the old colonial families. The qualities of this class are essentially those of the original race, modified by the conditions of life in an isolated and semitropical country and by long association with a native people. Its members are very attentive to the social amenities of life and usually possess the fine courtesy that is native to those of Spanish ancestry. Though more ceremonious and ostentatious than the manners of more brusque and outspoken northern peoples, their politeness generally has behind it much more sincere consideration for others than foreigners are disposed to give them credit for. They are reluctant to speak a truth that might hurt, so that it is sometimes difficult to learn their real opinions, though it is well for outsiders not to impose on this disposition to speak the thing that will please. After the manner of Spaniards, they are hospitable, and on questions affecting their personal or family honor they are very sensitive and proud. This class was decimated by the war of Lopez and is now overshadowed in importance by new families established in the country since the end of that war. In the commercial life of the country they are of relatively small importance, but are given to the law and politics or to the life of the estanciero or country landlord.

The second element in the population consists of those families that have settled in Paraguay since 1870. These range from the second and third generation, now thoroughly nationalized, through later comers who have become naturalized, to foreigners who have retained their original nationality and affiliations, although long resident in Paraguay. Among this class those of Italian descent predominate, though there are several important families of French, Spanish, English, and German origin. They have intermarried extensively with the old native families and have become an important factor in local society and politics. They constitute the business element in the country and also the largest landed interest. It is the intelligence and energy of this class that have been the greatest force in raising Paraguay from the ruin in which the war of Lopez left it.

The majority of the people of the Paraguayan nation are the result of the mixture of the Spanish conquerors with the Guarani aborigines of the region. Guarani, in fact, remains the common language of the people. This speech ranks with Quechua in vitality and importance among the great lingual stocks of Indian America. The more progressive part of the population is trying to discourage its use, and

it is prohibited in the schools, but in spite of prohibitions it persists as the language of ordinary intercourse and is even spoken within the precincts of the National University. Although supplemented by borrowings from Spanish, because of its poverty of words, its use is a strong factor in the backwardness of the country, intellectually and otherwise. There is, moreover, no native literature that would serve to justify the perpetuation of the language. In the management of labor outside the towns some acquaintance with Guarani is almost indispensable, but in larger commercial dealings it can be ignored. Spanish is the medium of communication in business circles and is at least understood by most of the native population.

The Paraguayans are probably the most attractive appearing of the mestizo peoples of South America. Though of medium or small stature, they lack the harsher features of some of the Spanish-Indian races, and quite handsome faces are common. Complexions are lighter than is generally the case among the mesticized nations and even fair hair is often seen. They lack the robustness of the vigorous Chilean "roto," though the peons of the cattle estancias and the forest regions of the country are usually hardy and muscular. The craze for "association" football is a factor in raising the physical standard of the town dwellers.

CHARACTER AND HABITS.

The defects of the Paraguayan people are largely the result of the unfortunate circumstances of their past—too long tutelage by priests and dictators, who, while generally showing a paternal interest in the elemental material needs of their wards, rather discouraged the development of the individual self-reliance necessary in building up a strong citizenry. Another historical factor is the demoralizing effects of the disastrous war of Lopez. A further contributory force is a too exuberant soil, which reduces to a minimum the effort required for obtaining subsistence. Moreover, there is lacking the stimulus of more progressive neighbors to provoke in the Paraguayans the ambition necessary to rise above their too bountiful environment to the advantages of a higher standard of living. For their country is isolated in the heart of South America and the more advanced regions of Argentina and Brazil are situated far from the Paraguayan borders. Pathological factors also probably play their part in the backwardness of the nation, since "anquilostomia," or hookworm, is widely prevalent.

If they are strongly disposed to indolence and are improvident and lacking in initiative, it is because they see too little immediate incentive for more prolonged and steady industry or little need for provision against the future. The possession of a small patch of mandioca and maize, a few orange trees, and some chickens insures their owner against starvation. Although there is much poverty, that, in view of the small cost of subsistence, has none of the terrors of the same condition in the large cities, where the struggle for existence is far more difficult.

A desire to improve his lot is clearly manifest in the Paraguayan who lives in the larger towns. He aspires to raise his standard of living, and realizes that in order to do so he must change some of his traditional ways and adapt himself to the mere rigorous régime

that a more advanced state of society demands of him. More regular habits of work and a stronger sense of responsibility are the usual accompaniments of his new ambition. However, the gap between his old easy-going ways and modern conditions of life is so great that in the process of adjusting himself to the higher standards of living his character often deteriorates, since the circumstances of his past were not calculated to develop strength of character. He also lacks the proper public-school education that would fit him to undergo the transformation without a too severe trial of his character. Thus he is prone to be rather irresponsible and liable to become addicted to display and ostentation and to spend beyond his means to earn, a failing, however, that is not limited to Paraguayans. Old inhabitants also lament the decline of the honesty of former times and declare that movable property does not enjoy the same security it once had. It may be said in extenuation of these and other vices that they are the customary evils attendant on a more or less violent process of adjustment from a rather primitive state of culture to one with strange and more complicated responsibilities.

As a rule the native women are superior to the men. Certainly they are more industrious and dependable. The tremendous burden of saving the remnants of the race from starvation after the war strengthened the fiber of their character and made them more resourceful and independent. In spite of the almost complete restoration of the numerical equality of the sexes, the male portion of the population is still somewhat prone to leave a disproportionate share of the country's tasks to the women.

The country people, or campesinos, though more backward in a material sense than the inhabitants of the towns, have retained more of the primitive virtues of the race. Like nearly all Paraguayans, they are kind, hospitable, and cheerful, and gifted with a good sense of humor. One could travel the length and breadth of Paraguay through the rural districts without being obliged to pay a peso for food or lodging. The accommodations which they offer are few and primitive, but whatever there may be is given without stint or question or thought of recompense.

Though proud and sensitive on what they consider points of personal honor and quick to take offense when they feel a grievance, the Paraguayans under normal circumstances are a mild-mannered and pacific people. Most of the violence and disorders committed can be accounted for by addiction to caña, the strong native rum which is made from sugar cane. When under the influence of this drink they are disposed to be quarrelsome, and at such times cutting or shooting brawls are likely to occur. However, these fracases seldom take place in public, and the life of a foreigner is as safe in Paraguay as in any country in the world. The largest of the yerba companies prohibits the sale of caña on its lands and the law permits the establishment of temperance or prohibition zones around industrial plants where large numbers of men are employed. As it is, the general addiction to caña is one of the curses of the country. A strong predilection for gambling constitutes the other outstanding vice of the native Paraguayan.

Though naturally intelligent enough, the Paraguayan generally lacks the element of curiosity or ambition that would make him in-

ventive or ingenious. He is too disposed to be routinary and to do things as they have been done for generations. Yet he is very apt at imitation and learns quickly to operate machines. There are few distinctive native arts. The best known is that displayed in the designing of the ñanduti lace. Some excellent carving on wood and horn is also done. The natives of the country districts have accumulated from the extensive flora of the country an elaborate system of materia medica, and, though the curative virtues of many of these rural specifics is doubtful, the medicinal value of some of the remedies is certain. Their literature largely consists of the class of ballads or folk songs with which an agricultural and pastoral people usually begin their literary development. They are very fond of music and occasionally one of them shows high talent with the guitar or harp, but, lacking the necessary training and the encouragement of a larger and appreciative audience, they generally do not proceed far in their attainments.

INDIAN POPULATION.

The purely Indian population of Paraguay is small and of little economic importance. In eastern Paraguay there remain only two small tribes, both of them in the great forest region of the Alto Parana country. One of these is the Cainguaes, some of whom work in the yerbales. The other is the tribe of the Guayaquies, who roam over the forest area to the south of the Monday River. These are a timid people and completely uncivilized, although a few German missionaries are working among them.

In the Chaco the Indians constitute relatively a much more important element of the population. Though their numbers are generally given at 100,000, it is doubtful if there are half that many. These Indians do not belong to the Guarani race. There are several tribes, each of which occupies a rather vaguely delimited area of the Chaco. Along both sides of the Pilcomayo are the Tobas. To the north of them is the tribe, or, more properly speaking, a group of small associated tribes or clans, known as Lenguas. It is particularly among these people that the Anglican mission in the interior of the Chaco is working. In about latitude 24° are the Pilagas. In the northern Chaco are a number of tribes, among which are the Angaites, Sanapanas, Macatos, and the interesting and somewhat truculent Chamacocos.

These Indians are all of a very low order of civilization and are, moreover, not susceptible of much improvement. They do not have fixed settlements, but roam about the country, setting up their tollderias, or groups of rude huts, for a time and then moving on. They live by the chase and fishing, and in a few places in the western part of the Chaco they practice agriculture. Some of them work occasionally in the quebracho ports along the Paraguay River, in the logging camps, or on the cattle estancias. They are by no means satisfactory as laborers and usually decamp into the interior as soon as the hunger which drove them to work has been satisfied by a period of gorging. Though customs differ somewhat from tribe to tribe, their social organization is always of the simplest. The blood tie and a vague sense of tribal unity are the only bonds that hold a particular group together. The authority exercised by the cacique,

or chief, varies considerably between different tribes, some groups apparently living in a state of primitive anarchy.

The danger to the whites from the Chaco Indians has generally been exaggerated. The Indians, in fact, generally fear the whites, and where the former have committed "outrages" or aggressions it has usually been in retaliation for wrongs committed by the latter. Naturally the Indian has a rather elementary notion of private property, and when food is scarce he may cut a steer out of a herd for his own consumption. He is also prone to resent the further advance of the whites into his hunting grounds. Because of their incompatibility with the interests and civilization of the whites it is only a question of time when the Chaco Indians will have entirely disappeared.

CITIES AND TOWNS.

ASUNCION.

The city of Asuncion is located on the Paraguay River almost opposite the mouth of the Pilcomayo and about 1,000 miles north of Buenos Aires, from which it is reached in about two and a half days by a biweekly international train, or in about four days by river steamer. It stands on undulating ground rising from the high banks of the lagoon or bay which serves the city for a harbor. Across the river to the west the level expanse of the Gran Chaco stretches away to the horizon, and to the east the city merges off along a network of sandy roads into a cluster of suburbs, such as Trinidad, Luque, and San Lorenzo del Campo Grande.

Asuncion is the capital of the Republic, a circumstance which, owing to the centralized character of the Paraguayan Government, focuses nearly all political life at this point. It is also the center of the social life of the country, nearly all the important families having homes in Asuncion, where they spend at least a part of the year. As the commercial center of the nation, about 81 per cent of the imports and 40 per cent of the exports pass through its customhouse.

In the absence of a scientific census, the population of the city can be given at between 90,000 and 100,000 people, but it is probably nearer the former than the latter figure. It includes within its precincts about 10 per cent of the total population of the Republic, but this proportion represents at least 25 per cent of the total buying capacity of the country. The most important elements in the foreign population of the city, exclusive of Argentinians, are the Spaniards and Italians. There are usually about 30 or 40 Americans resident in the city and as many English persons.

GOVERNMENT.

According to the national organic law of municipalities the city government of Asuncion is vested in an intendente, or mayor, and a junta, or council. The former is appointed by the President of the Republic and is subject to the control of the Minister of the Interior. The council consists of nine members, with nine alternates, who are elected by popular vote, foreign residents having the right of franchise in municipal elections. The executive branches of the city administration include the three departments of finance, public works, and general services, and three offices respectively charged with the inspection of the food and drink of the city, the general supervision of municipal sanitation, and the inspection of cattle and hogs killed for public consumption. The jurisdiction of the city

authorities covers the usual field of municipal administration, such as markets, streets, etc., but in matters of bond issues and concessions for public improvements the final decision lies with the National Government. For example, the contraction of indebtedness by the city beyond a certain proportion of its ordinary resources requires the passage of a law by the National Congress. This would apply in such matters as the granting of a contract or a concession for paving the streets, which would involve an issue of bonds on the city's credit.

ELECTRIC LIGHT AND TRAMWAYS.

The only strictly public-utility company operating in Asuncion at present is the Compañía Americana de Luz y Tracción, which supplies the city with electric light and power and operates the street-car system. These properties were acquired in 1918 from the Asunción Tramway, Light & Power Co. (Ltd.) by the Compañía Italo-Argentina de Electricidad of Buenos Aires, which is owned by a group of Italian, Swiss, and Argentine capitalists. The former company was controlled by the same group of interests that controlled the Central Paraguay Railway, and, like it, experienced a succession of financial difficulties resulting in a receivership, and in the case of the public-utility company in its sale to the Argentine corporation named above. The railway company had made loans to the tramway, light, and power company amounting to £87,685 (\$426,720), including interest, and had invested a total of £229,359 (\$1,116,175), which was later reduced to about £207,000 (\$1,007,365). In consideration the railway company had the option of taking £119,850 (\$583,250) in cash or £144,398 (\$702,713) in debentures of the utility company, besides £15,624 (\$76,035) in cash, £240,000 (\$1,167,960) in ordinary shares, and £135,274 (\$658,180) in preference shares. The railway company was further obligated to spend an additional sum of £9,465 (\$46,061), for which it was to receive preference shares of the tramway company. The latter company represented a nominal capital of 3,000,000 gold pesos (\$2,895,000).

In 1914 the Asunción Tramway, Light & Power Co. was unable to meet its obligations contracted with the Central Paraguay Railway Co., and in October it was put into the hands of a receiver.

The earnings of the utility company, in United States currency, during the years 1914 to 1918 were as follows:

| Items. | 1914 | 1915 | 1916 | 1917 | 1918 |
|----------------------------------|-----------|-----------|-----------|-----------|-----------|
| Passenger traffic..... | \$161,544 | \$117,910 | \$114,826 | \$122,962 | \$151,747 |
| Freight and parcels traffic..... | 3,051 | 3,158 | 3,601 | 4,706 | 3,596 |
| Electric lighting..... | 21,077 | 78,540 | 74,316 | 96,288 | 135,873 |
| Other sources..... | 7,932 | 5,013 | 1,304 | 5,090 | 4,331 |
| Total receipts..... | 193,604 | 204,621 | 194,047 | 229,046 | 295,547 |
| Operating expenses..... | 181,043 | 192,786 | 158,332 | (a) | 240,234 |
| Net earnings..... | 12,561 | 11,835 | 35,715 | ..... | 55,313 |

(a) Not available.

Comparative figures on the traffic carried by the tramways in the two years 1914 and 1918 are given in the following table:

| | | 1914 | 1918 |
|--------------------------|----------|-----------|-----------|
| Passengers..... | number.. | 2,850,955 | 4,235,402 |
| Freight..... | kilos.. | 2,304,470 | 2,782,010 |
| Baggage and parcels..... | do..... | 368,422 | 847,830 |

The company operates in all 43 kilometers (27 miles) of line, of which 28 kilometers are operated by electricity, 11 kilometers by steam tram, and 4 kilometers by mules. There are nine different services, all of which center at the port, whence they radiate throughout the city, two of them reaching into the country as far as Villa Mora and Puerto Sajonia. At Villa Mora connections are made with the steam train for San Lorenzo del Campo Grande and at Recoleta with the mule car for Trinidad. The minimum fare is 1 paper peso, which is increased to 3.50 pesos for rides beyond a certain zone.

The company furnishes electric light at the rate of 18 centavos gold (\$0.1737 U. S.) per kilowatt hour. The consumer is also charged for the use of the meter.

WATER AND SEWAGE—TELEPHONES.

The city obtains its water supply from wells. Most houses have their own wells, from which water is raised either by hand or by windmill or electric pumps, but a number of artesian well owners sell water from tank carts to consumers, mainly for drinking purposes. This water is sold at a rate of about 50 centavos a bucket. In spite of the apparent danger from dependence on a water supply of this character, there are far fewer deaths from typhoid fever than would be expected. Ice is sold by the two local breweries.

Asuncion lacks a sewer system, and in lieu of sewers the inhabitants depend upon pits or the streets. The city is saved, however, from what would otherwise be the result of such a condition by the excellent natural drainage which it enjoys, due to the slope of the ground and the sandy nature of the soil, which quickly absorbs any liquid refuse. The action of the sun and an occasional torrential rain are other providential substitutes for a sewer system. The municipality operates a garbage-disposal service, and the carts of the "limpieza publica," or street-cleaning department, occasionally make the rounds of the city.

During 1919, in answer to requests from the municipal authorities of Asuncion, an American engineering company submitted proposals for the construction of a waterworks and sewage system for the city. In spite of the favorable terms offered by the company and the urgent need of such improvements, the National Congress had failed to ratify the contract when it adjourned at the end of the year. After having waited several months for a definite reply to their conditions, the company's representatives in Asuncion, when faced with the prospect of further long delay, withdrew their proposals on January 1, 1920.



FIG. 1.—INDIAN OF EASTERN PARAGUAY.



FIG. 2.—VIEW IN THE CHACO.



FIG. 3.—TYPICAL HOUSE IN THE COUNTRY.



FIG. 4.—ONE OF THE CARTS WHICH SUPPLY ASUNCION WITH WATER.

Another anomalous state of affairs consists in the fact that in this city of nearly 100,000 people there is no public telephone system. The city formerly possessed such a service, but on the destruction of its central station by fire the service was suspended and never reestablished. A concession for the installation of a new system has been annulled by the municipality because of failure to comply with the terms of the concession within the time prescribed. Some responsible local interests are preparing to establish a telephone system now that this obstacle has been removed. There can be no doubt whatever of the financial success of a telephone company in Asuncion, if properly managed. Business houses would welcome such an aid to their work, and a sufficient number of subscribers has already been assured to guarantee its profitable operation. Concepcion and Villa Rica, and even the small town of Paraguari, have telephone systems.

POLICE AND FIRE PROTECTION.

The city police department is operated on a military basis. The force consists of young recruits who are serving their time in the army under the law of obligatory service. They make up in numbers what they lack in special qualifications for their duties, but in facing an emergency they seldom lack the elemental courage that is common to most of the race. However, the preservation of law and order in Asuncion presents few serious problems outside of a certain well-defined circle which indulges in brawls and misdemeanors among its own members.

Due to the noncombustible character of the building materials commonly employed in Asuncion, there is little occupation for a fire department, but in the case of a serious conflagration the absence of high-pressure water service would make the problem of extinguishing it of very doubtful issue. Fire risks are fortunately at a minimum, however, and the possibility of loss by fire is little considered by property owners.

There is one local insurance company, La Paraguaya, which does a general insurance business, but especially fire and river. It is capitalized at 1,500,000 Paraguayan pesos. The value of the property insured by this company at the end of 1918 amounted to 68,898,400 pesos. Collections on premiums during the same year were 304,463 pesos. The sum of 116,096 pesos was paid to the Government as taxes and 90,099 pesos was paid on losses. Accumulated funds amounted to 592,085 pesos.

MARKETS.

In the matter of public markets, conditions in Asuncion are still in considerable need of improvement. In spite of reforms the central market is insanitary and lacking in many of the most essential features of a modern city market. It is overcrowded, too, and inadequate to the growing needs of the city. The municipality has long considered projects for reforms which, though sacrificing the picturesqueness of the present market, would tend toward cleanliness and enlarge its facilities, in addition to providing for small ward markets to relieve the congestion of the central market, but,

in spite of their urgency, none of these schemes have been put into effect.

The meat which is sold in the public markets is brought in from the municipal abattoir (matadero) at Trinidad. The city's daily supply of vegetables and other produce is brought from the surrounding country by burro, tram, oxcart, boat, or on the backs or in the arms, and almost entirely by women. Some of these market women sell their goods from covered stalls; others squat all day before a few pesos' worth of vegetables piled on the ground.

STREETS.

The streets of Asuncion are laid out at right angles, after the fashion of most Spanish-American cities and in contrast to the crooked streets of cities in old Spain. Their width is generally ample for the needs of the city's traffic. The most important business street is Calle Palmas, with its extension, Calle 14 de Julio. The streets paralleling this thoroughfare on either side, Estrella, 25 de Mayo, Presidente Franco, and Presidente Wilson, also contain important business houses. The best residence streets are the two avenues, Colombia and España, the former of which in particular could be made a very fine boulevard, with a long stretch of automobile driveway. At present the general appearance of even the best and most important streets is shabby and ill kept.

Probably no single feature of Asuncion leaves so unfavorable an impression on the transient stranger in the city as the condition of the streets. These are paved with rough cobblestones, which, as one foreign observer declared, "Appear as though they had been thrown about at random and allowed to remain where they fell." Such a state of the streets makes automobile or carriage driving an ordeal instead of a pleasure, although wherever possible chauffeurs avoid the paved part of the street and run their cars on the rails of the tramway tracks. In spite of the fact that the cobblestones are generally recognized as an anachronism inconsistent with the city's increasing pretensions to modernity, the municipality continues the laying of this class of paving. Several years ago the experiment was made of paving a square of Calle Palmas with blocks of ybipyta wood. Though manifestly superior in appearance and in some other respects to cobblestones, this material has not shown the durability that was expected of it. Meanwhile, in the very outskirts of the city, in the three quarries of Tacumbu, Emboscada, and Ita Enramada, there is excellent material for smooth stone-block paving. Asphalt and other materials commonly used in modern street construction are beyond the present resources of the city.

In the Plaza Uruguaya Asuncion possesses a very attractive, though small, park. Other parks are the Plaza Independencia and the Plaza Constitucion, the latter located along the river front. The extensive grounds of the Botanical Gardens at Trinidad also serve as a public park.

ARCHITECTURE.

Three fairly distinct types of building are found in Asuncion. The first is the colonial type, whose plain features are in accord with the simplicity of the old régime in Paraguay. These buildings are

always low, built of adobe or unfaced brick, with heavily barred windows, and often with a colonnade of heavy pillars running the length of the house in front and supporting a portico of ample dimensions. Although Asuncion is nearly four centuries old, few buildings remain that date back to the period of Francia's dictatorship, so that one encounters very few houses of the style described here. The old palace of the colonial governors, which was once occupied by Francia, was destroyed a few years ago.

The second category of buildings consists of those which were constructed during the latter part of the Lopez era and the first decades of the constitutional period; that is, to about 10 or 20 years ago. In the case of the older houses these are generally of one story, and, in fact, the typical Paraguayan house has always been of one story. The exterior of these buildings is usually plain, but with a steadily increasing effort at relieving the severity of the outside walls by varying the design of cornices, windows, and doorways. The traditional *reja*, or barred window, remains, though here also the decorative element enters in, and the Andalusian patio or courtyard, or at least a large walled garden, is retained. The large majority of buildings in Asuncion still belong to this general type.

The third type is represented by the same modernist style of building which is in vogue in Argentina and in Latin cities in general. It is more ornate than its predecessors of a simpler time, especially in the so-called *quinta-chalet* style, and sometimes runs to the fantastic extremes of a veritable rococo, although it is generally in good enough taste. Most of the new residences of the better-to-do families are constructed in this modern style. In these houses the patio or garden, which accounts for so much of the charm of the place, is often sacrificed to the demands of an exotic fashion or to the desire for greater room space. The tendency has been to preserve, however, the balcony throughout the stages of this architectural evolution but gradually to exclude the *reja*.

Most houses are constructed of brick baked in kilns along the river, which is faced with a coating of plaster, often so prepared as to give the illusion of fine stone. The outside wall is usually tinted a light shade. Red tiles constitute the ordinary roofing material. Flat, figured tiles are used for floors and when highly glazed are frequently used for decorating the lower part of the interior walls. Little wall paper is used, but it is customary to cover the upper part of the walls and the ceiling with stenciled figures. Window shades are unknown, but venetian blinds and shutters are used instead.

The total value of building operations in Asuncion in 1917 was 14,113,276 paper pesos, against 7,422,814 pesos in 1913, representing an increase of almost 100 per cent. The architectural renovation of the city is now (1919) progressing at an even more rapid rate with the construction of new buildings for business and residence purposes.

HOTELS—AMUSEMENTS.

The following are the most important hotels in Asuncion: St. Pierre, Gran Hotel del Paraguay (Cancha), Hispano Americano, Cosmos, and Parque. The first of these is a French hotel and is noted for its cuisine. The principal advantage of the second is its spacious grounds. The third of the list is the most centrally located.

Rates at these hotels range from 7 to 12 Argentine pesos per day (American plan). Accommodations are inferior to those in the better Buenos Aires hotels, but persons who are not too exigent in matters of modern plumbing or too fastidious in demanding a constant change of menu can be quite comfortable in the best of the Asuncion hostelries.

For those accustomed to the theatrical diversions of more metropolitan centers, Asuncion can offer little in the way of theaters. The theater which the second Lopez planned on the model of La Scala of Milan was never completed and now serves as the offices of the Internal-Revenue Bureau. The two most important theaters offer seasons of Italian opera and light Spanish comedies alternated with vaudeville. The cost of transporting a large company and its equipment from Buenos Aires, with so few large towns on the way, largely accounts for the inability to engage a first-class troupe for the local theaters. There are two or three motion-picture theaters, where American films are shown.

Other diversions available to foreigners residing in Asuncion are good hunting and fishing within a short distance of the city, motor boating, horseback riding, and excursions to San Bernardino, on Lake Ipacarai, where there are good hotel accommodations. In the present state of the streets and roads about the capital, automobile riding for pleasure is out of the question.

CHURCHES.

Asuncion is not remarkable for its churches. The fine Jesuit churches of colonial days were built in the southern part of the country, in the region still known as the "Misiones." The churches in Asuncion date from the Lopez régime, or even more recently. There is little notable in the architecture of the Cathedral, which is the metropolitan church of the bishopric. Probably the most interesting of the city's churches is that of the Encarnacion, whose unfinished pile from its high position dominates the city. Anglican church services are held in Asuncion every Sunday.

COST OF LIVING.

The following list of prices, given in Paraguayan paper pesos, will furnish an idea of the cost of living in Asuncion: Bread, 4 per kilo; butter, 35 per kilo; meat, 9 to 15 per kilo; eggs, 9 per dozen; chickens, 15 to 20 per pair of young roosters, 35 to 40 per pair of hens; potatoes, 30 per 10 kilos; flour, 4 per kilo; sugar, 6.5 per kilo; coffee, 22 per kilo; milk, 4.50 to 5 per liter. At the time these prices prevailed (November, 1919) the Paraguayan peso was worth about \$0.05 in United States currency. The kilo is equal to about 2.2 pounds and the liter to slightly more than a quart.

MINOR CITIES AND TOWNS.

VILLA RICA.

Villa Rica is situated on the Central Paraguay Railway at a distance of 94 miles, seven and a half hours' ride, from Asuncion. The strictly urban population of the municipality is probably between

7,000 and 9,000. The city is located in an agricultural region of great natural fertility. Its present rather backward aspect does not reflect the evident possibilities that its situation holds for the place, and an organization of the leading citizens has begun an energetic campaign for radical improvements.

CONCEPCION.

This city is located on the east bank of the Paraguay River about one and a half days' ride by steamer above Asuncion. There is a biweekly boat service between these places. The population within the city proper can scarcely exceed 5,000 or 6,000. Concepcion owes its importance to its position as the commercial center of the northern part of the Republic. It is the distributing center for the towns along both sides of the Paraguayan-Brazilian border, for the yerba country that lies within its hinterland, for a number of large cattle estancias, and for some of the quebracho ports along the river. Due to the energetic administration of a former intendant, Concepcion is supplied with better streets than are found in the capital, and the town in general presents a very neat appearance. Some strong independent business interests are located here.

ENCARNACION.

Encarnacion lies opposite the Argentine city of Posadas, where the Central Paraguay Railway makes ferry connections across the Alto Parana with the Argentine Northeastern system. Its population is probably somewhere between 1,500 and 2,000 people. The town owes its importance to its position at the crossing of two trade routes and to the circumstance of its being the port of entry for the rail traffic between Paraguay and Argentina. As such the place should have a good future. In spite of its excellent natural site, however, a more shabby-appearing town of its importance would be difficult to find.

OTHER TOWNS.

Among the still smaller towns Paraguari and Pilar are probably the most important. Most of the minor towns and villages in Paraguay are in a lamentable condition of backwardness, a state of affairs that offers little prospect of betterment until the agricultural and cattle-raising regions that support them can attain a greater degree of prosperity and the internal communications of the country are greatly improved. Those situated along the railway or the river have the best outlook for towns of this class, but even these share in the general ill appearance of Paraguayan towns. Scattered over the country are dozens of straggling hamlets that exhibit little life of any kind, and often lack even the saving grace of picturesqueness.

AGRICULTURE.

EARLY CONDITIONS.

When the Spaniards first came to the land between the Paraguay and the Parana Rivers they found the aborigines an agricultural people, in marked contrast to the hunting and nomadic tribes that roamed the Argentine plains. During colonial times the Jesuits not only developed the natural tendencies of the natives in agricultural pursuits, but were themselves innovators in the matter of introducing many plants and in improving the cultivation of those already existent in the country. In fact it is doubtful if such care was given to agriculture until within the last few decades. Paraguay still is and must remain for some time essentially an agricultural and stock-raising country. Yet it is an anomaly that the country's second largest bill for foreign goods is for foodstuffs. In 1918 this bill amounted to more than 3,000,000 gold pesos, a sum which was but little more than balanced by the exports of agricultural products, in which was included the important item of tobacco.

The natural characteristics of the country are excellently adapted to diversified farming. Its chief limitations in this respect are those common to nearly all subtropical regions. For example, a country which combines the climatic conditions so favorable to plant growth is naturally also a propitious one for the breeding of the insect pests that prey on these same plants. Also certain cultures which demand a more rigorous climate for their development will not flourish in the hot Paraguayan summer. Yet the list of plants native to Paraguay or acclimated there since the coming of Europeans ranges from wheat to the banana, both of which are found growing in the same latitude and within a comparatively short distance of each other.

. SOIL.

The predominant soil is the tierra colorada, or "red land," which appears over the greater part of the area of the true Paraguay as distinguished from the Chaco. It is the soil classed in the country as "arenó ferruginosa"—that is, sandy, with a marked ferruginous or iron element in its composition—and is largely the result of the decomposition of sandstone and other kindred formations. This is the soil which gives the familiar red coloring to the region about Asuncion. Ordinarily of quite satisfactory degree of fertility, where the forest growth has been cleared, this soil is enriched by the accumulated humus of centuries. Most of the present agricultural development of Paraguay lies within the area where this class of soil prevails.

As one proceeds farther from the Paraguay River the soil loses its predominantly sandy character and becomes argillaceous or clayey, but of a finely granulated formation and very easily worked. It also contains iron and is even richer in the amount of vegetable mold.

From its three principal constituent elements it is known by the compound name of "arcillo-ferro-humifera." This soil is of great depth and exuberant fertility. It probably reaches its extreme fertility in a belt roughly bordering the Alto Parana, where the signs of former volcanic activity, which account for the formation of the original basis of the soil, are especially evident.

In the lowlands and the river bottoms of the west central and southwestern parts of the country the soil belongs to neither of these two principal classes. It is lacking in iron and is whitish or gray to black in color. It is generally alluvial in origin, the result of the detritus deposited over a long period of time by the far-spreading inundations of the Paraguay. In the southwestern region it is generally argillaceous, with the added element of the humus produced from the decayed vegetation of the lowlands. It also has a hard clayey subsoil, which retains the water on or near the surface. This is preeminently the district of the great esteros, or swamps, and lagoons. In some parts of the river valleys the soil, though clayey in appearance, is largely composed of a compact layer of fine sand. These lowlands are in general well suited to the cultivation of rice.

In the country between the Aquidaban and the Apa in the northern part of the country a strong percentage of lime is present in the soil. This calcareous character of the ground would prevent any extensive agricultural development in that region, although excellent pasturage is found there.

Of the larger divisions of Paraguay the Chaco is least suited for agricultural purposes. It is largely covered with a layer of grayish soil, which, though cultivable, is very thin, except where the river inundations have accumulated a heavier bed of alluvial earth. This top layer is, moreover, underlaid with an impermeable stratum of hard clay. Much of the water of the Chaco is saline, and the ground is also more or less impregnated with salt. Though generally ill adapted for farm crops, the luxuriant growth of grasses in the Chaco makes it a very good cattle country. The most marked exception to the relative infertility of the Chaco is a small cultivated district about Villa Hayes, where the river has left the confines of the true Paraguay for a short distance and cuts across a sector of eastern Paraguay.

CLIMATE AND RAINFALL.

Though climate has been discussed in a preceding chapter, a summary of the principal climatic factors affecting agriculture will be given here. There is comparative uniformity of climate over most of the country, although naturally variations of average temperature and other differences result where the topographic and hygrometric conditions are different. Thus, height above sea level, which is never great in Paraguay, the degree of exposure to the prevalent winds and the prospect of a sufficient and well-distributed rainfall vary from place to place, though seldom radically, save in the case of the Chaco.

Latitude is probably the least important factor in determining the climate of a particular district in Paraguay. The most outstanding exception to this general rule is that in the case of the southwestern

triangle of the country, whose peculiar geographical position exposes it to the chilling south winds from the neighboring Provinces of Argentina, to which climatically it is related. It is this circumstance which unfits this part of Paraguay for the cultivation of some of the plants which flourish in the rest of the country. Here the probability of hard and frequent frosts is a factor which always has to be taken into account in farming calculations. It is not that the rest of the country is immune from frosts, for they may occur well into the Torrid Zone, but the chances of damage from this source are especially great in this open southern quarter of the country. In fact, the only part of Paraguay that enjoys complete freedom from frosts is a narrow belt along the Alto Parana, well above Encarnacion, where the nocturnal fogs that settle over the river prevent the radiation which would lower the temperature of the atmosphere to the danger point. It is this fact that makes this region of Paraguay the zone par excellence for the cultivation of genuinely tropical crops.

The likelihood of loss from droughts decreases quite steadily from west to east, being greatest in the western part of the Chaco and almost nil in the extreme eastern and southeastern part of the country. Being a nonagricultural region, the Chaco can be eliminated from consideration, and in the cultivated area east of the Paraguay River the possibilities of serious droughts are less than in most of the more advanced agricultural regions of the world.

PESTS.

Swarms of locusts (*langostas*), which the Paraguayan people insist are of Argentine origin, occasionally invade parts of the country and play havoc with the crops where they happen to settle. Fortunately their visitations are not frequent enough in any one locality to discourage farming operations. In some districts ants constitute a veritable plague, and their hills (*tacurú*), attaining a height of 6 or even 10 feet, may be seen thickly scattered over considerable areas. A worm or weevil, usually referred to by the generic Spanish name *Gorgojo*, often attacks the corn after the ears have been pulled. When attacked by this worm it is often difficult to save enough corn to serve as seed for the next planting, and the farmer is either forced to consume or sell his crop prematurely, or let it be destroyed by the *gorgojos*. Because of his apathy or ignorance he seldom succeeds in combating effectively these and the other insects that attack his crops, although most of them would undoubtedly yield to the applications of the proper preventives, such as spraying with insecticides.

F FARMS.

Paraguay is neither a land of small independent proprietors nor of extensive or large-scale farming, though the present tendency is distinctly in the former direction. The typical Paraguayan farm is a small rented tract (*chacra*) of a few acres, on which the *campesino* raises enough for the needs of his family and a surplus to be exchanged in the town for whatever manufactured goods he is forced to buy. He rents of the landlord "on shares," usually paying from 15 to 20 per cent of his crops. He generally builds his own house,

which is a primitive affair of one or two rooms, with a thatched roof and walls made of thick poles set close together in the ground and with the cracks usually plastered with mud. Half of the house is often left open to the weather. The earth serves as a floor. Though the conditions of rental are easy, the landlord is commonly indulgent to his tenants in the case of a bad year, and cases of eviction are rare.

For those desirous of establishing themselves as independent farmers lands can be obtained on easy terms, either from private land owners or colonizing companies (*empresarios*) or in the Government colonies. An increasing number of the cultivators evidence a desire to become owners of the land which they cultivate, but many lack the persistence and steadiness required to accumulate a money reserve sufficient to pay the installments even on a long-time sale. Yet good farming land can be bought for from \$8 to \$10 gold a hectare. At the latter price a tract of 10 hectares, or about 25 acres, would cost but \$100, while a 50-hectare farm could be purchased for \$500. Naturally the price at which land can be acquired depends on the quality of soil, distance from the market, and the eagerness of the owner to sell. The Banco Agricola offers to act as intermediary for those cultivators who desire to obtain land on their own account.

TRANSPORTATION AND MARKETS.

The lack of good roads constitutes one of the most serious obstacles to the development of agriculture in Paraguay. The roads are everywhere bad, even those which lead into Asuncion. They often consist of alternate stretches of deep sand and deep mud, and where their course lies across low ground a heavy rain turns them into veritable bogs. High-wheeled oxcarts are the customary means of transporting farm produce to market. The deep ruts made by the huge wheels add further to the roughness of the roads. The carts are, moreover, very cumbersome and slow, and the native, by placing the burden of the yoke on the base of the horns instead of on the shoulders, considerably reduces the pulling ability of his oxen. As many as six or eight oxen are sometimes hitched to a single two-wheeled cart. The cost of hauling to market under these circumstances, often over a distance of many leagues, may consume all the profit that should result from the sale, or at best leave a margin so small that it discourages the producer. For small loads burros are commonly used, but this animal has a very small carrying capacity. The country women, who bring produce into the towns to sell in the public market for local consumption, generally use a burro to carry their day's stock as well as themselves.

In some parts the roads are supplemented by the inland waterways with which Paraguay abounds and down which farmers can row or pole boatloads of produce. However, the service which such streams might lend to local traffic of this kind is seriously limited by the fact that the agricultural districts which largely supply the needs of the four principal towns of the country are not connected with their principal market by any navigable water. Relatively little of the produce destined for Asuncion or Concepcion reaches them by the Paraguay. The same is true in the case of Encarnacion and the Alto Parana, while Villa Rica is entirely an inland town.

Except for tobacco and oranges there is yet little demand in foreign markets for Paraguayan farm products, so that most of the agricultural production is consumed at home. The farmer seldom knows anything of the market conditions beyond his immediate neighborhood, or of current price quotations, so far as such standard prices may exist. Nor does he often possess the knowledge necessary to enable him to plan his crops in relation to the probable demands of the year's market. If maize happens to bring a good price one year the likelihood is that in the following year all the farmers will plant the greater part of their tracts to maize, with the result that the price falls to the point where it does not pay to haul it to market.

The factor of exchange—the fluctuating value of the paper peso—which is such an important element in commercial calculations, is generally a source of mystery to the campesino. He is at the mercy of the middleman, who buys up the crops for delivery in the large towns. Both these individuals and the direct agents of the large exporting houses, who take most of the tobacco produced, are often referred to by the unsavory name of "acaparadores," or monopolizers. The latter have the added advantage over the producer of understanding the part which demand and exchange play in these transactions.

STATE OF THE FARMING CLASS.

The condition of the country population is in marked contrast to the natural advantages of its environment. Living on a soil which will produce in abundance anything that will grow in a subtropical climate, the campesino is in a state of chronic backwardness. He lacks the initial and fundamental stimulus of a schooling adapted to the peculiar needs of a rural population. Until recently there was no public agency for teaching him better methods of farming, and, in fact, the Government concerned itself little with helping him to improve his lot until the Banco Agricola was founded. When there was a revolution he was the principal loser, so that one Paraguayan has written: "Revolutions cause more devastation to the farmer than do the great swarms of locusts."

Separated from his only market by roads that are generally all but impassable and exploited by the "acaparadores," he becomes apathetic and fatalistic, resigning himself to a shiftless hand-to-mouth existence, which the climate and soil enable him to follow with a minimum of exertion. In his address to Congress in 1918 the late President Franco said on this question:

There is a considerable portion of the population which is not accustomed to complain, but whose situation is very grievous and deserving of the greatest interest. I allude to the rural proletariat. We must go to their aid with all the spiritual and material means of which we can dispose in order to improve their conditions of living, combat the diseases which undermine their bodies, assign them lands and teach them how to cultivate them. This is the price which we must pay in order that they may be the principal support of the nation in the future, as they have been in three centuries of its past.

AGRICULTURAL IMPLEMENTS.

Modern farming implements are little used, since their cost puts them beyond the reach of any but the more affluent cultivators. However, the Banco Agricola endeavors to encourage their use by

selling them to farmers "on time," charging the cost of the article in Asuncion plus 6 per cent on the deferred payments. A heavy hoe and a machete constitute the inevitable equipment of the farmer. Add to these a shovel, a hand rake, and a primitive plow dragged by oxen, and his supply of tools is complete. With these, as a young Roman who administers one of the largest enterprises in Paraguay remarked, "he farms as in the days of Cincinnatus." The rational rotation of crops is almost unheard of. The same crops are planted on the same ground year after year, and only a thin layer of the deep, fertile soil is worked. Fertilizers are, of course, foreign to the whole system of cultivation, and with even the most rudimentary resort to the practice of rotation would be unnecessary.

Under these conditions the present demand for imported implements is very small. The following tables of the imports of agricultural machinery into Paraguay are taken from official statistics, and the values given are those used in customhouse calculations:

PLOWS.

| Classes and countries of shipment. | 1912 | 1913 | 1914 | 1915 | 1916 | 1917 | 1918 |
|---|------|------|------|------|------|------|------|
| Common plows, unpolished iron, valued at \$3 (gold) each: | | | | | | | |
| United States..... | 574 | 807 | 456 | 388 | 502 | 584 | 312 |
| Germany..... | 450 | 372 | 12 | — | — | 38 | 60 |
| Argentina..... | — | — | — | — | — | — | 42 |
| England..... | 3 | — | — | 3 | — | — | — |
| Uruguay..... | — | 6 | — | — | — | — | — |
| Polished iron or steel plows, valued at \$6 each: | | | | | | | |
| United States..... | 67 | 258 | 25 | 5 | 36 | 3 | — |
| Germany..... | 36 | 80 | 5 | — | — | — | — |
| England..... | — | 5 | 1 | — | — | — | — |
| Argentina..... | — | 2 | — | — | — | — | 9 |
| Uruguay..... | — | 6 | — | — | — | — | — |
| Iron or steel plows, wheeled, valued at \$30 each: | | | | | | | |
| United States..... | 3 | 5 | 7 | 1 | 3 | 10 | 231 |
| England..... | 1 | 2 | — | 3 | 3 | — | 2 |
| Germany..... | 8 | 7 | 1 | — | 1 | 9 | 25 |
| Argentina..... | — | 1 | — | 1 | — | — | — |

In addition to the above, there were imported in 1912 plows to the value of \$400 from England, and in 1915 plows and harrows to the value of \$3,024 from the United States, quantities not being specified. In 1914 there were also imported 1 American disk plow valued at \$90 and 108 other American plows valued at \$690, and 18 German plows valued at \$197.

HARROWS.

During 1913, 29 harrows were imported, 14 of which came from the United States. In the period 1914-1918 only 22 were imported, 12 of these from the United States.

MOTOR TRACTORS.

In the absence of extensive farming, the market for motor tractors is necessarily very small. During the seven years 1912-1918, 12 tractors were imported, of which 8 were from the United States. None was imported during 1918.

MACHETES.

| Kinds and countries of shipment. | 1912 | 1913 | 1914 | 1915 | 1916 | 1917 | 1918 |
|---|--------|--------|--------|--------|--------|--------|--------|
| | Dozen. | Dozen. | Dozen. | Dozen. | Dozen. | Dozen. | Dozen. |
| For cutting weeds, valued at \$1.20 per dozen: | | | | | | | |
| Germany..... | 2,370 | 1,925 | 780 | | | | |
| England..... | | | | | 501 | 410 | 935 |
| Argentina..... | | | | | 12 | 306 | 1,078 |
| United States..... | | | | | | 96 | |
| France..... | | | | | | 66 | |
| For cutting sugar cane, valued at \$4.50 per dozen: | | | | | | | |
| Germany..... | 1,929 | 2,034 | 1,760 | | 12 | 27 | |
| England..... | 82 | 65 | 64 | | 27 | 641 | 31 |
| Argentina..... | | | | | 48 | 196 | |
| United States..... | 19 | 123 | 60 | | 10 | 108 | |
| Other countries..... | | | 110 | | 192 | | 40 |

Of the imports for 1915, 140 dozen were credited to Holland. Because of the position of Argentina as a distributing center for American and European manufactured goods these figures by no means represent the actual extent of imports from the United States. In fact, the machete most commonly seen in Paraguay and throughout central South America is of American make.

BANCO AGRICOLA.

The most important factor in improving agricultural conditions in Paraguay is the Banco Agricola. Though the general purpose of this institution is declared to be the advancement of practically all the industrial interests of the country, in practice its efforts have been almost entirely limited to the promotion of agriculture.

The bank was founded in September, 1887, but, after passing through a period of serious vicissitudes, was entirely reorganized in 1894. In order to establish a position of prestige, from where it could effectively carry out its program, it has had to contend with political intrigues, self-interest, popular apathy and distrust, administrative incompetence, and lack of adequate resources. It has had many enemies, some of whom criticize it as being too conservative in its policies of agricultural relief, and others condemn it because, as they hold, it interferes with private business. In spite of these obstacles its accomplishments have undoubtedly justified the beneficent conception which led to its creation.

Its original capital was 2,781,000 paper pesos. This was raised to 14,500,000 pesos in 1903, and in 1915 the National Government assigned 15,000,000 pesos more to its use. At present its capital is 34,590,097 pesos, equivalent to something over \$2,000,000. At the end of 1918 outstanding loans amounted to 22,611,551.04 paper pesos and 8,630 gold pesos. Deposits amounted to 4,025,194 paper pesos and 3,589 gold pesos. The value of its properties, including tools and implements, real estate, the sugar and rice mill at Guarambare, and stores of rice, tobacco, cotton, and seeds was 6,717,484 paper pesos. The various agencies of the bank throughout the country represent a total value of 2,907,031 pesos.

ORGANIZATION AND ACTIVITIES.

The bank is a Government institution and is subject to the control of the National Council of Agriculture and Industries, which was

founded in 1894. The latter body consists of five members, whose position is ad honorem, and who really serve in the capacity of a board of directors of the bank. The actual management of the bank is in the hands of an "administrator" and a "vice administrator." There are 108 agencies de campaña, or country agencies, through which the bank carries on its work. There is no ministry of agriculture in the Government, and the nearest approach to such a body was the Department of Fomento, subject to the Ministry of the Interior, but now extinct.

The program of the bank's activities is very comprehensive. Although it has been unable to put all of its designs into execution, the enumeration below of its functions and policies represents a very substantial measure of actual accomplishment.

(a) Encouragement of certain cultures, notably of tobacco and cotton, as being exportable products, but also of rice, sugar, coffee, and other crops, and the stimulation of artificial yerba culture. In connection with this form of propaganda it introduces seeds of superior varieties from countries farther advanced in cultivation of a particular crop, as in the case of Pinar del Rio tobacco. It also attempts to spread the knowledge of better methods of cultivation.

(b) Guarantee of markets and prices. The bank aims to insure a market to the farmer who will plant certain new crops until private buyers are ready to take the supply. Meanwhile the bank acts as selling agent, placing the product on a foreign market. Such, for example, is its present policy with regard to cotton. It further aims to guarantee minimum prices for the standard crops, though in assuming this part of buyer and seller it clashes with the interests of the private dealers in agricultural produce. Yet in these transactions it disclaims any concern with pecuniary profit for itself and declares its purpose to be only the assurance of a reasonable return to the producer.

(c) Encouragement of the use of modern agricultural implements and facilitation of their purchase by cultivators.

(d) Construction and repair of roads and bridges. Since it realizes that the execution of many features of its program depends upon a radical improvement of road conditions, the bank is carrying on an energetic campaign for remedying this fundamental defect of internal transportation. Although work is under way on a few of the more important roads, as that connecting Asuncion and San Lorenzo del Campo Grande, funds are still lacking for any comprehensive effort in this direction. In this field it has taken over one of the attributes of the defunct Department of Fomento. Projects have been introduced into Congress for establishing a National Department of Roads and Bridges, but in lieu of this the administration of the bank favors the assigning of this phase of its work to a special board of Defensa Agricola y Ganadera, or commission for the protection of the agricultural and stock-raising interests of the country. Such a board would be subsidiary to the Council of Agriculture and Industries and thus closely associated with the bank itself.

(e) Loans to farmers. In making loans to cultivators the bank demands sound security, generally in the form of a mortgage on the property of the borrower. In fact, the possession of a "chacra," or piece of land, is the prerequisite to securing a loan, and only applications from serious farmers of known industry and reliability are considered. This precaution has been adopted as the result of the bank's early experiences with what the administrator has called "platonic" or "dilettante" farmers. These loans are made for the purpose of making improvements or extending the area of cultivation. Its system of "warrants" is one of the most important phases of the bank's activities.

The maximum which the bank will lend to any one individual or organization is 250,000 paper pesos, the exact amount advanced being decided by the council. For any sum over 25,000 pesos the guarantee of a mortgage sufficient to cover the sum loaned is required. The time allowed for repayment varies from 1 to 10 years. The rate of interest, when paid in advance, is 6 per cent, and when paid at the end of the year is 7 per cent. The loans made by the bank during

1918 amounted to a total of 2,475,903 paper pesos and 1,245 gold pesos. Of its outstanding loans it collected during the same year 4,485,035 paper pesos and 1,245 gold pesos. Interest collected on its loans amounted to 1,122,398 paper pesos.

(f) Distribution of seeds in years following failures of crops.

(g) Promotion of agricultural education and experiments. Among the instruments of the bank's educational and experimental work are: (1) The experimental farm at Ipacarai; (2) the instruction in agricultural methods given to soldiers of the garrison at Paraguarí; (3) the Botanical Gardens at Trinidad, on the outskirts of Asuncion. These gardens consist of 450 hectares of land. The experiment farm conducted here forms the nucleus of a real national school of agriculture.

All this work is under the direction of a competent European specialist in the field. The principal object of the educational propaganda of the bank is the extension of agricultural instruction to all the rural schools through co-operation with the national Ministry of Agriculture.

(h) Establishment of agricultural societies. The general plan proposed for these societies is somewhat like that of the American granges.

(i) Creation of a service of agricultural statistics. At present there is no data available for an accurate estimate of the acreage in each crop or the yearly production.

(j) Encouragement of the acquisition of land by tenant farmers. The bank aims to acquire land for sale to cultivators on easy, long-time payments and in lots of not more than 25 hectares (62 acres), the title remaining with the bank until the payments are completed. The settlement of Paraguayan families on the lands of the "national colonies" is another phase of this movement.

(k) Operation of the Oficina Revisadora de Frutos. The functions of this public produce warehouse will be described under the heading "Tobacco."

(l) Operation of the sugar and rice mill at Guarambare.

(m) Stimulation of manufacturing industries that will utilize materials produced within the country.

(n) The encouragement of new transportation companies which would offer additional facilities and cheaper freight rates for the exportation of Paraguayan products.

(o) The securing of new markets abroad for Paraguayan products. Reference has already been made to the desire of the bank's officials for the establishment of a board of agricultural defense. It is proposed that such a body should be intrusted with the destruction of the locusts and cattle ticks and other pests that infest the crops or herds of the country. It would also have charge of the canalization of some of the streams of the interior with a view to utilizing them for irrigation purposes in times of drought.

AGRONOMIC STATION AT PUERTO BERTONI.

This experiment farm is maintained by Dr. Moises S. Bertoni, a Swiss, who was for 10 years head of the old National School of Agriculture. Dr. Bertoni conducts his experiments, the results of which he has published in numerous monographs, on a site he has chosen in the protected zone along the Alto Parana a little below the mouth of the Rio Acaray. Here he has founded a colony known as the Colonia Guillermo Tell. A thorough exponent of scientific agriculture, Dr. Bertoni has devised methods of improving existing cultures and has demonstrated the adaptability of numerous foreign cultures to Paraguayan conditions. He has also classified and studied the characteristics of most of the native flora, both wild and cultivated. However, the illiteracy and routine methods of the farmers make impossible the effective popularization of the results of his work.

PRODUCTS.

TOBACCO.

Among the agricultural products of Paraguay tobacco occupies the first place in the foreign trade of the country, comprising approxi-

mately 70 per cent of the exports of this class. Of the total exports of the Republic in 1918, 20 per cent consisted of tobacco. This percentage was exceeded only by the combined products of the cattle industry, including in this the exports of live cattle, hides, and canned meats.

Though grown over most of the country, tobacco is best produced in the region between the twenty-fourth and twenty-sixth parallels. The favored district for its cultivation is the zone east of Asuncion known as the Cordillera, where the red, sandy soil and peculiar climatic conditions especially lend themselves to its growth. The centers of the industry are the towns of Barrero Grande, Atyra, Tobati, and Piribebui, all of which are situated in this zone, Carapegua on the other side of the railway, Villa del Rosario in the north, and the important town of Villa Rica. The Banco Agricola estimates the total area planted to tobacco at 10,000 hectares, or about 25,000 acres. It also estimates the total production of 1918 at 15,000,000 kilos, and for 1919 anticipates a crop of 16,000,000 kilos.

The growing of tobacco in Paraguay began in the early years of the eighteenth century and has ever since held an important place in the industrial life of the nation. Estimates of its production at different periods of the last century made by foreign observers are as follows: 1829, 1,229,350 kilos (Bompland); 1851, 5,176,000 kilos (Demersay); 1860, 7,500,000 kilos (Du Graty); 1863, 9,800,000 kilos (Bourgade la Dardye); 1889, 10,500,000 kilos (Bourgade la Dardye).

Most of the tobacco grown still consists of the old "criollo" varieties, which were introduced in the eighteenth century. The predominant classes are those known as "chahy" and "chileno." The leaf of the former is somewhat similar in shape to that of the Bahia variety, but thicker and with heavy veins. Its color is much like that of the typical Philippine tobaccos. The chileno is remarkable for its large leaf, and is also much esteemed for its quality. However, the Banco Agricola has made an energetic propaganda in favor of Habana tobacco. The first seeds were brought from Cuba in 1900, and the results of the first experiments with the Vuelta Abajo plants were declared to be highly satisfactory. In spite of the conservatism of the growers, the cultivation of the Habana variety has spread greatly during the last decade, resulting in a marked improvement in the average quality of the national product.

Methods of cultivation are still rather primitive. One of the most serious difficulties of the industry is the lack of proper facilities for curing the tobacco. In order to meet this need the Banco Agricola and some of the large buyers have established "secaderos," or drying sheds, in some of the important centers. These buildings are generally roofed with galvanized iron, and their sides are so arranged that they can be opened or closed according as the weather is favorable or not for the drying of the tobacco.

MARKETING OF TOBACCO.

Most of the crop is bought up by a few Asuncion firms, which send their agents out into the tobacco districts or buy through local merchants, to whom they advance the necessary money or the goods for which the farmer exchanges his tobacco. These firms, most of which are in turn importers of general merchandise, export the

tobacco and use the credits thus obtained to balance their accounts for goods imported from abroad. The most important of these houses is that of Rius y Jorba. Others are Gimenez Hermanos, El Molino Nacional, and the Société Française d'Exportation. The Sociedad Exportadora del Paraguay, organized by Federico Krauch and other local interests, which recently suspended operations, was formerly an important factor in the tobacco business of the country.

In proportion to the population the local consumption of tobacco is very large. Even the majority of the women of the lower classes are inveterate smokers of the strong, black cigars which the natives prefer. Outside the larger towns the family supply of these cigars is usually rolled in each home. There is little pipe smoking in the country.

Practically all the tobacco exported passes through what is known as the Oficina Revisadora de Tabacos y Mercado de Frutos. This institution, which is under the supervision of the Banco Agricola, is situated in Asuncion, near the bank of the river and on a spur of the railroad which was built to facilitate the handling of the tobacco. Although established to serve as a general clearing house for national products, in practice its functions have been limited to the classification and certification of tobacco destined for exportation. The only exception is its use as a deposit for cotton. In order to force all tobacco to be submitted to inspection by the bureau the Government levies an export duty of 10 centavos gold per 10 kilos on all tobacco which has not passed through the bureau's warehouse. The result of the rigid system of inspection and grading, by which the quality of the contents of each bale is certified, has been to raise the prestige of Paraguayan tobacco in the foreign markets.

The amount of tobacco passed through the warehouse during the period 1900-1918 was as follows:

| Years. | Bales. | Kilos. | Years. | Bales. | Kilos. |
|-----------|--------|-----------|-----------|--------|-----------|
| 1900..... | 25,939 | 2,568,836 | 1910..... | 59,424 | 5,622,803 |
| 1901..... | 23,075 | 2,241,853 | 1911..... | 72,422 | 6,435,358 |
| 1902..... | 31,627 | 3,202,673 | 1912..... | 45,454 | 4,001,892 |
| 1903..... | 34,750 | 3,356,272 | 1913..... | 61,077 | 5,827,762 |
| 1904..... | 55,844 | 5,048,265 | 1914..... | 59,258 | 4,648,648 |
| 1905..... | 50,934 | 4,837,182 | 1915..... | 68,154 | 7,378,934 |
| 1906..... | 30,938 | 5,111,113 | 1916..... | 76,172 | 7,038,052 |
| 1907..... | 24,119 | 2,568,836 | 1917..... | 64,757 | 6,129,867 |
| 1908..... | 51,340 | 5,034,657 | 1918..... | 74,568 | 7,641,979 |
| 1909..... | 50,433 | 4,850,935 | | | |

The warehouse of the bureau is a large steel and concrete building which was constructed in 1913. Its capacity is 40,000 bales of about 100 kilos each. The charge for inspection and for storage for a month is 5 paper pesos per bale of a maximum weight of 110 kilos. For bales weighing up to 125 kilos the charge is 6 pesos. Storage charges after the first month are 1 peso per month on each bale.

The tobacco is graded in seven classes, as follows: Pito, media, regular, buena, doble, pintón, and pará. The pito represents the first leaves from the plant and the pará the last, the others representing the intervening stages in the maturing of the leaves. The percentage of nicotine ranges from about $2\frac{1}{2}$ per cent in the pito to 7 per cent in the pará. The first four classes have been much in demand in the European market as material for fillers. The last

three classes, consisting of larger and stronger leaves, have found a good market in Argentina as material for wrappers. During the first six months of 1919 the prices of the different grades in the Asuncion market ranged between the following figures: Pito, 53 to 56 paper pesos per 1½ kilos; media, 55 to 58; regular, 57 to 63; buena, 59 to 65; doble, 61 to 69; pintón, 68 to 72; pará, 73 to 90.

Before the World War Germany was the largest European buyer of Paraguayan tobacco, but since the beginning of that war Spain and France have taken an increasing share of the production. There has also been a steady demand in Argentina, where the Paraguayan tobacco meets the competition of that from Brazil. The freight rate on tobacco from Asuncion to Buenos Aires by steamer is 45 Argentine paper pesos per 1,000 kilos (\$0.86 per 100 pounds). The rate was recently lowered from 62 pesos.

The exportation of tobacco, by countries, during two prewar years and two recent years, was as follows:

| Years and countries to which shipped: | Pito to buena. | Doble to pará. | Fragments. ^a | Curuvica and palo. | Negro. |
|---------------------------------------|---------------------|-----------------|-------------------------|--------------------|--------|
| 1912. | | | | | |
| Germany..... | Kilos. 1,521,348 | Kilos. 6,331 | Kilos. | Kilos. 247 | |
| Argentina..... | 1,190,518 | 772,675 | 1,582 | 1,359 | 6,866 |
| Spain..... | 228,348 | | | | |
| France..... | 7,531 | | | | |
| Uruguay..... | 225,489 | | 1,037 | | |
| Holland..... | 20,800 | | | | |
| 1913. | | | | | |
| Germany..... | 3,656,661 | 2,336 | | 3,010 | |
| Argentina..... | 586,577 | 891,495 | | 425 | 16,602 |
| Belgium..... | 19,000 | | | | |
| Uruguay..... | 206,385 | 57,254 | | | |
| 1917. | | | | | |
| Argentina..... | 1,729,214 | 1,198,335 | 42,542 | 678 | 8,787 |
| Spain..... | 2,631,893 | 133,161 | | | |
| France..... | 829,310 | | | | |
| Uruguay..... | 184,706 | 94,027 | | | 73,071 |
| Italy..... | 20,977 | | 2,000 | | 8,700 |
| Cuba..... | 4,810 | | | | |
| Brazil..... | | | | | 260 |
| United States..... | 5,952 | | | | |
| 1918. | | | | | |
| Argentina..... | 977,589 | 552,655 | 8,485 | 22,417 | 3,300 |
| Uruguay..... | 341,870 | 107,332 | | | 33,106 |
| Spain..... | 2,225,709 | 341,476 | | 1,749 | |
| France..... | 2,078,208 | 86,188 | | 25,427 | |
| Italy..... | 245,885 | 22,188 | | | 7,600 |
| England..... | | 26,799 | | | |
| Brazil..... | | 1,004 | | | 570 |

^a Classed as filler and wrapper in 1917 and 1918.

The curuvica and palo, and negro, grades are exported as material for the preparation of chewing tobacco.

The total exports of tobacco in kilos from 1914 to June, 1919, were as follows:

| Classes. | 1914 | 1915 | 1916 | 1917 | 1918 | 1919 (six months). |
|--------------------|---------------------|---------------------|---------------------|---------------------|---------------------|------------------------|
| Pito to buena..... | Kilos. 3,484,807 | Kilos. 5,494,486 | Kilos. 6,005,865 | Kilos. 5,406,862 | Kilos. 5,869,281 | Kilos. 3,202,023 |
| Doble to pará..... | 1,039,248 | 1,628,791 | 765,619 | 1,425,523 | 1,137,642 | 750,100 |
| Negro..... | 13,140 | 22,504 | 55,430 | 90,818 | 44,575 | 30,671 |
| Total..... | 4,517,185 | 7,145,781 | 6,826,914 | 6,923,203 | 7,051,478 | ^a 3,982,704 |

^a Total exports for the first 11 months were 8,806,003 kilos.

The tobacco exported in 1918 represented a "real value," as distinguished from "customs value," of 2,366,137 gold pesos.

A small amount of tobacco is imported into Paraguay, largely from Cuba and Brazil. During the years 1914 to 1918 this importation was as follows: 1914, 14,877 kilos; 1915, 8,428 kilos; 1916, 9,593 kilos; 1917, 10,764 kilos; 1918, 16,015 kilos. Most of this imported tobacco paid a duty of 62 per cent.

MANUFACTURE OF TOBACCO.

The manufacture of cigars and cigarettes is an industry of growing importance in Paraguay. The four leading concerns engaged in this business are: Compañía Tabacalera del Paraguay, Asuncion; Rafael Fernández y Compañía, Asuncion; Guillermo Alonso, Asuncion; La Anglo-Paraguaya, Aregua. In making cigars and cigarettes these factories mix imported tobacco with the native product.

The total output for 1918 is estimated at about 10,000,000 cigars and cigarettes of a total value of about 430,000 pesos gold. The home industry is protected against foreign competition by a duty of 62 per cent. The exports of cigars and cigarettes for the period 1914-1918 were as follows: 1914, 557 kilos; 1915, 2,312 kilos; 1916, 2,870 kilos; 1917, 7,219 kilos; 1918, 13,139 kilos; 1919, first six months, 3,027 kilos. The exports for 1918 represented a "real value" of 44,463 gold pesos. The principal market for Paraguayan cigars and cigarettes is the Argentine.

In spite of the tariff barrier, constantly increasing quantities of Argentine and Uruguayan cigars and cigarettes are being imported into Paraguay. Because of the considerable contraband in these articles, the official statistics of imports do not represent the actual extent of such imports, which were officially given as 33 kilos in 1917 and 126 kilos in 1918. There was a marked increase in such imports during 1919. Some cigarettes labeled as of "American" manufacture have recently made their appearance in Asuncion shops. Cigars and cigarettes and pipe tobacco destined for the Paraguayan market must be tightly sealed, preferably in tins, in order to prevent their drying in transit.

SUGAR.

In spite of the setback which it has suffered during the past three years, the sugar industry is one of the most promising in Paraguay. The soil is excellently adapted to the growing of cane, and though frosts and droughts are apt to damage the crop climatic conditions are no more unfavorable than in some other districts of South America where sugar is grown on a profitable scale.

Most of the cane fields are within close reach of the railway or within close proximity to the factories. The higher lands in the more tropical regions of the east and north of the Republic combine the best conditions for the raising of sugar cane. However, at present the area of greatest production is in a narrower belt along the railway between the Tebicuary-mi and the Pirapo. This section, although otherwise well situated, is particularly subject to the heavy frosts that occur in the neighboring region of the Misiones. Three of the seven most important concerns engaged in the business are located in this field. Two more are situated a little to the southeast

of Asuncion, two are at Villa Hayes in the Chaco, and another at Concepcion in the north. The Banco Agricola estimated the total area under cultivation in 1919 at 7,750 hectares and the crop of cane in 1918 at 387,500 tons.

The variety which has been cultivated longest in Paraguay is a small white cane, giving a small percentage of sugar, which was originally brought in from Peru. About the middle of the last century the large white Portuguese cane was introduced from Brazil. Another variety much cultivated is a violet colored cane imported from the Argentine Province of Santiago del Estero and originally from British India. Though said to be more resistent to frosts than the white cane, the proportion of sugar is less. More recently another variety of cane has been introduced from Tucuman. Paraguayan growers have not yet experimented with any of the Cuban varieties.

Methods of cultivation in Paraguay are still very primitive and the growers operate on a small scale. Most of the cutting, which is done with a machete especially made for the purpose, takes place between June and October.

There are a large number of small "trapiches," or mills, scattered over the country, which produce a coarse brown sugar known as "raspadura" besides considerable quantities of caña. Their total production is insignificant as compared with that of the seven factories referred to above. Much of the machinery used in these larger concerns is out of date, as a result of which the proportion of sugar obtained from the cane is low. The average extraction ranges from 3 to 5 per cent, though one of the smaller mills produces a higher percentage. However, some of the companies have lately begun the installation of more modern equipment. Practically all the factories produce also caña and industrial alcohol.

The eight principal producers of sugar are as follows: La Azucarera Paraguaya, Ibytimi (Tebicuary); La Azucarera Nacional, Iturbe; La Azucarera Villa Hayes, Villa Hayes; J. Lahaye, Villa Hayes; Banco Agricola, Guarambare; Jacobo Friedmann, Villa Rica; Surroca & Lluis, San Lorenzo de la Frontera; Aurelio S. Agüero, Concepcion.

By far the most important of these companies is the Azucarera Paraguaya. This concern is capitalized at 500,000 gold pesos. It is a joint-stock company, the principal interests being the Banco Mercantil and Gomez & Cia., general exporters and importers of Asuncion. It paid a 6 per cent dividend to its stockholders in 1918. This company possesses 7 square leagues of land in the vicinity of the plant. It also has in operation a Decauville railway of 12 kilometers and proposes to construct 22 kilometers more. By arrangement with the Central Paraguay Railway it operates a daily train service over the latter's track as far as Iturbe for the purpose of bringing in the cane which is produced along this section of the line. The growers haul their cane to the stations in oxcarts and load it on cars for transportation to the mill at Tebicuary.

The Azucarera Nacional belongs to Bonvehi & Cia., of Asuncion. Its mill at Iturbe began operations in 1919 and expects to compete with the Azucarera Paraguaya for the cane supply of the zone which lies between these two factories. This concern is capitalized at 120,000 gold pesos.

The Azucarera Villa Hayes is capitalized at 100,000 gold pesos and is the property of the Asuncion firm of Censi y Pirotta. Señor José Lahaye, the owner of the other establishment in the Villa Hayes district, is of Belgian origin and the pioneer of the sugar industry of Paraguay. The plant belonging to Aurelio S. Agüero and known as "La Caída" represents a total capital of about 600,000 paper pesos. It is located on the Paraguay River near the mouth of the Ipane and about 8 miles below Concepcion. Most of the machinery of this establishment, which is one of the best managed in the country, is of American manufacture. Though it lies in a region that is excellently adapted to the growing of cane, the total area under cultivation is still small. The business conducted by Jacobo Friedmann at Villa Rica is capitalized at 150,000 gold pesos. This concern has lately devoted itself more to the distillation of caña and alcohol than to the production of sugar.

The production of sugar by the different mills during the years 1914 to 1918 was as follows:

| Location of mills. | 1914 | 1915 | 1916 | 1917 | 1918 |
|--------------------|---------------------|---------------------|-------------------|-------------------|-------------------|
| Ibytimi..... | Kilos. 1,930,000 | Kilos. 1,772,707 | Kilos. 682,000 | Kilos. 640,640 | Kilos. 456,880 |
| Villa Hayes..... | 271,000 | 147,750 | ----- | 6,870 | 46,000 |
| San Lorenzo..... | 195,000 | 37,920 | ----- | ----- | 20,240 |
| Villa Rica..... | 100,000 | 70,000 | 71,570 | 71,063 | ----- |
| Guarambare..... | 50,000 | 64,000 | ----- | 1,841 | 37,700 |
| Concepcion..... | 13,000 | 42,000 | 35,000 | 12,500 | 6,000 |
| Total..... | 2,589,000 | 2,136,377 | 788,570 | 732,914 | 561,820 |

The percentage of sugar produced from the cane ground in each factory during this period was as follows:

| Location of mills. | 1914 | 1915 | 1916 | 1917 | 1918 |
|--------------------|------|------|-------|-------|-------|
| Ibytimi..... | 6.2 | 5.46 | 5.36 | 5.0 | 2.5 |
| Villa Hayes..... | 3.6 | 2.00 | ----- | 4.0 | .8 |
| San Lorenzo..... | 6.5 | 3.60 | ----- | ----- | 1.6 |
| Villa Rica..... | 6.4 | 4.00 | 4.09 | 5.0 | ----- |
| Guarambare..... | 2.9 | 2.88 | ----- | 3.0 | 1.7 |
| Concepcion..... | 7.0 | 2.40 | 2.50 | 7.0 | 5.7 |
| Average..... | 5.5 | 4.20 | 4.80 | 3.8 | 1.8 |

The production of the two Chaco establishments is included together in these tables. The Iturbe factory did not begin operations until after the end of 1918. The steadily decreasing production during this period was due to a succession of very unfavorable seasons. In 1918 a drought during December and January was followed by an excess of rain in May and June, and the climax was reached with heavy frosts in July. As a result the year's crop was a failure.

The production of industrial alcohol and caña during the same five years was as follows:

| Years. | Alcohol. | Caña. | Years. | Alcohol. | Caña. |
|-----------|--------------------|-------------------|-----------|--------------------|--------------------|
| 1914..... | Liters. 415,200 | Liters. 53,350 | 1917..... | Liters. 252,600 | Liters. 318,000 |
| 1915..... | 235,200 | 217,150 | 1918..... | 377,400 | 180,121 |
| 1916..... | 46,600 | 543,524 | | | |

Because of the widespread contraband and small-scale operations in these lines, the official statistics do not represent the total production of the distilling business.

Only during the two years 1914 and 1915 did the national production exceed the importation of sugar. The relation between production and consumption is given in the following table:

| Years. | Importa-tion. | Production. | Total. | Years. | Importa-tion. | Production. | Total. |
|-----------|---------------------|-------------------|---------------------|-----------|-----------------|---------------------|---------------------|
| 1910..... | Kilos. 1,982,796 | Kilos. 834,000 | Kilos. 2,816,796 | 1915..... | Kilos. 9,780 | Kilos. 1,526,377 | Kilos. 1,546,137 |
| 1911..... | 2,293,232 | 478,000 | 2,771,232 | 1916..... | 1,469,172 | 788,570 | 2,257,742 |
| 1912..... | 1,735,922 | 849,000 | 2,584,922 | 1917..... | 2,141,785 | 732,914 | 2,874,699 |
| 1913..... | 2,608,924 | 1,461,000 | 4,069,924 | 1918..... | 2,300,458 | 561,820 | 2,862,278 |
| 1914..... | 1,866,241 | 2,550,000 | 4,425,241 | | | | |

During the first 11 months of 1919 the imports of sugar amounted to 2,554,021 kilos. The imports of sugar in 1918 represented a "real value" of 378,479 gold pesos. Refined sugar pays a tariff duty of 5 centavos gold per kilo and unrefined sugar 6 centavos.

The importation, by countries, during the three years 1916 to 1918, was as follows:

| Classes and countries of shipment. | 1916 | 1917 | 1918 |
|------------------------------------|---------------------|-------------------|------------------|
| Refined: | | | |
| United States..... | Kilos. 1,118,083 | Kilos. 880,920 | Kilos. 4,970 |
| Italy..... | 1,350 | ----- | ----- |
| Spain..... | 5,600 | ----- | ----- |
| Argentina..... | 60,965 | 4,279 | 1,070 |
| Uruguay..... | 41,350 | 13,300 | 6,700 |
| Cuba..... | 2,200 | 22,200 | ----- |
| Brazil..... | 23,572 | 262,512 | 4,760 |
| England..... | ----- | 9,900 | ----- |
| Total..... | 1,253,000 | 1,193,111 | 17,500 |
| Refined in cubes: | | | |
| United States..... | 9,230 | 4,450 | 15,687 |
| Italy..... | 1,140 | ----- | ----- |
| Netherlands..... | 1,120 | ----- | ----- |
| France..... | 2,400 | ----- | ----- |
| Argentina..... | 390 | ----- | ----- |
| Uruguay..... | 262 | 2,260 | ----- |
| Chile..... | 530 | ----- | ----- |
| Total..... | 14,542 | 7,240 | 15,687 |
| Unrefined: | | | |
| United States..... | ----- | 49,420 | 66,725 |
| Brazil..... | 195,830 | 886,939 | 2,032,816 |
| Argentina..... | 5,800 | 125 | 132,930 |
| Uruguay..... | ----- | 4,950 | 17,300 |
| Cuba..... | ----- | ----- | 17,450 |
| Total..... | 201,630 | 941,434 | 2,267,271 |

The decline in imports from the United States was due to the restrictions imposed by that country on exportation as a result of war conditions. The place formerly held by the United States has been taken by importations of unrefined sugar from Brazil.

Exports of sugar from Paraguay during the period 1914 to 1918 were as follows: 1914, 420,500 kilos; 1915, 2,450 kilos; 1916, 680 kilos; 1917, 270 kilos; 1918, 360 kilos.

All the sugar exported in 1914 was sent to Uruguay. The small quantities now exported are consumed in Argentina. In case Paraguay should increase her production to the point where there remained a considerable surplus for export her chief competitor would be Brazil. The freight rates on sugar shipped from Asuncion to Buenos Aires, which constitute a serious handicap on development of Paraguayan export trade, amount at present to about 60 pesos Argentine per 1,000 kilos (\$1.16 per 100 pounds) by rail and 30 pesos by the steamers of the Mihanovich Line.

COTTON.

Cotton was grown at an early period in Paraguay on the lands of the Jesuit "reductions." A considerable impulse was later given to the industry in the time of the Dictator Francia, and Carlos Antonio Lopez ordered his people to plant cotton on their land. As a result, at the beginning of the great war which ruined the agriculture of the country, cotton was grown in all but one of the departments of the Republic. During the ante bellum era the needs of the population were simpler than they have become during the last few decades, and the country was much more nearly self-sufficient. The cotton raised within the country was worked up into cloth in the native homes; but the importation of English manufactured cottons since the war has removed the incentive of necessity that was responsible for the former development of the industry.

Little attention was given to cotton growing after the war until the Banco Agricola began in 1904 to stimulate the renewal of its cultivation. Its propaganda has been especially active during the last two or three years and with results which it declares entirely satisfactory. It distributes seed to the farmers who will undertake the cultivation of cotton, and, in order to assure them a market for the product, guarantees to take all which they raise. For the present it has set a fixed price for cotton delivered at its country agencies of 3 paper pesos per kilo for the first grade and 2 pesos for the second. The cotton bought on these terms is shipped to Asuncion, where it is ginned and baled in the warehouse of the Oficina Revisadora. Here the Banco Agricola operates a small gin made in New London, Conn., and has recently ordered another gin for installation at the same place. No attempt has yet been made to utilize the seed, which is dumped on the ground outside and allowed to go to waste.

Largely through the initiative of the bank an association of cotton growers was recently organized, known as the Asociacion de Algodoneros del Paraguay, for the purpose of promoting the cultivation of cotton on a larger scale.

There can be no question of the natural adaptability of the country to the raising of cotton, either in the matter of climate or soil, although, as with all cultures demanding similar climatic conditions, the possibility of frosts in some sections is a factor which has to be reckoned with. The central and northern parts of the Republic are the regions which are especially suited to its growth. At present the most active center of the cotton-growing movement is the Scandinavian colony at Puerto Elisa, a short distance below Asuncion. The president of the Cotton Growers' Association referred to above is Señor Emilio Johansen, of this colony.

The Banco Agricola puts the present area under cultivation at about 350 hectares. The 1918 crop amounted to about 385,000 kilos of seed cotton, and the bank estimates the probable crop for 1919 at 600,000 kilos.

The yield per hectare in Paraguay is very high. Dr. Moises Bertoni, in a series of experiments made several years ago with a number of varieties, American, Indian, and Egyptian, found the average production per hectare in the central part of the country to be about 625 kilos and in the Alto Parana region, where the cultivable area is still very limited, the average was 800 kilos, with the maximum of 1,026 kilos. A Belgian colonist in the agricultural district of the Chaco has obtained an average of 1,200 kilos per hectare over a period of six consecutive years. Besides the imported varieties grown, there is an indigenous cotton-bearing tree which bears for 10 or 12 years without replanting. In the case of the cultivated cotton the seed is planted in October and November and the crop is picked in the period from January to May. Excepting the product of the old "criollo" (domestic) plants, the fiber is of good length and quality. Consignments which were sent to England in 1902 were declared by Manchester buyers to be entirely satisfactory. It is the assurance of a market in England, which supplies most of the cotton textiles used in Paraguay, that has given the greatest impetus to the present movement for the growing of cotton.

RICE.

The cultivation of rice is an increasingly important branch of Paraguayan agriculture, and rice itself constitutes one of the most common articles of the national diet. The chief areas of production are the southern part of the Republic and the lowlands of the central zone. The climate is nearly everywhere favorable, and the soil, except in those parts where its prevailing character is sandy, is well adapted to its growth. In the low ground between the railway and the Paraguay River, where the largest expanses of rice fields are found, there is a natural irrigation that maintains the required degree of humidity throughout the growing period. In case of drought there are usually sources of water near at hand in the numerous streams of this region that can serve for purposes of artificial irrigation. The most important rice-growing zone includes the departments of Villegas, Ypane, Guarambare, Ita, Ituagua, Yaguaron, and Pirayu.

The varieties most commonly found are the old "criollo" rice, long grown in the country and now known as the "Paraguayo," and the Piedmontese variety, which is grown in the Po Valley in Italy. Rice is usually sown during the period from the first of August to the early part of November, but preferably in September. As the crop generally matures within six months after planting, the harvest takes place between February and May; so that it is possible to raise two crops a year on the same ground. As in other lines of farming in Paraguay, methods of rice cultivation are quite primitive. Most of the work is done with a wooden plow, a hoe, and a shovel. Such implements as disk or tooth harrows, or machines for sowing and reaping rice, are beyond the resources of the small farmer, who grows most of the rice of the country. The rice is thrashed by driving oxen

or mules over the straw, which is spread out on a piece of hard ground. However, there are now several mills equipped for husking rice.

Under the methods ordinarily in practice, rice yields in Paraguay about 2,500 kilos to the hectare, but with improved methods this can be raised to 4,000 kilos. The Banco Agricola estimates the area now under cultivation at about 1,050 hectares. The crop of 1918 reached a total of about 2,100,000 kilos, and for 1919 a total production of about 2,800,000 kilos is expected.

The rice grown in Paraguay is far from sufficient to satisfy the local demand. The difference between production and consumption is made up by importations which now largely come from Brazil. Imports of rice for the three years 1916 to 1918 were as follows:

| Grades and countries of shipment. | 1916 | 1917 | 1918 |
|-----------------------------------|---------|---------|---------|
| Indian or Bremen grades: | | | |
| Brazil..... | Kilos. | Kilos. | Kilos. |
| England..... | 111,111 | 99,004 | 311,858 |
| India..... | 86,437 | 33,835 | 9,100 |
| Spain..... | 36,204 | 18,560 | 2,166 |
| Italy..... | 47,450 | 720 | ----- |
| United States..... | 7,200 | 36,214 | ----- |
| Uruguay..... | | 12,750 | 7,058 |
| Argentina..... | 21,180 | 12,456 | 18,410 |
| Germany..... | 30,370 | ----- | 6,370 |
| Japan..... | | | 27,410 |
| Total..... | 339,952 | 614,293 | 382,372 |
| Finer grades: | | | |
| Spain..... | 73,636 | 93,654 | 3,955 |
| United States..... | | 10,762 | 7,280 |
| Uruguay..... | | 3,623 | ----- |
| England..... | 212 | 2,160 | ----- |
| Brazil..... | | 17,315 | 60,211 |
| Italy..... | 22,505 | 1,500 | 4,250 |
| Argentina..... | 3,585 | 20 | 2,745 |
| Germany..... | 511 | ----- | ----- |
| Norway..... | 73 | ----- | 3,337 |
| Total..... | 100,522 | 129,034 | 81,778 |
| Unhusked: | | | |
| Argentina..... | | 11,000 | ----- |
| Brazil..... | | | 287,270 |
| Grand total..... | 440,474 | 751,327 | 751,420 |

The imports credited to England, Germany, and Uruguay, of course, represent rice of Indian or other origin which was reexported from those countries to Paraguay. Imports of rice during the first 11 months of 1919 fell to 154,299 kilos.

MAIZE.

Maize is produced bountifully in every part of Paraguay except in the region of the Chaco. Nearly every farmer grows a patch of it for the use of his family and stock, and if there is a surplus and the current price justifies the extra effort he hauls some to the nearest town for sale in the local market. Cultivation is still on a small scale, but the plains of the southern part of the Republic lend themselves to cultivation on a larger scale. Though soil and climate are both favorable to its growth, the crop is often damaged by worms after the ears have been pulled. Several varieties of both field corn

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FIG. 5.—BUSINESS STREET IN ASUNCION.



FIG. 6.—MAIN STREET IN CONCEPCION. IT COINCIDES WITH THE TROPIC OF CAPRICORN.



FIG. 7.—BANCO DE LA REPUBLICA, ASUNCION.



FIG. 8.—BANCO MERCANTIL DEL PARAGUAY, ASUNCION.

(maiz duro) and sweet corn (maiz blando) have long been grown in Paraguay. In fact, the plant is indigenous, antedating the Spanish conquest, and is still generally known by the Guarani name of "abati."

Maize grows with so little effort on the part of the farmer that he has felt little inducement to improve his methods of cultivation, such as the more careful selection of seed. Yet even with the elementary system of cultivation in vogue for centuries he attains a yield of 1,600 kilos per hectare, and with one variety of sweet corn he is able to grow three crops a year.

Maize is not only widely used for the feeding of horses and mules, but both classes constitute an important part of the national diet. "Locro," or hominy, is made, and from the corn meal there is prepared a kind of bread, known as "chipa de maiz," to distinguish it from the "chipa de mandioca," which is made of the "fariña" produced from mandioca. However, the native cuisine has by no means exhausted the possibilities of maize as an article of food. There is, for example, nothing approaching in quality the corn bread which is made in the southern part of the United States. There has been no attempt to can sweet corn in Paraguay.

The Banco Agricola gives the area of land planted to maize at 66,000 hectares, which is the largest extent of ground devoted to any crop in the country. It places the production for 1918 at approximately 132,000,000 kilos.

It is an interesting comment on the state of agriculture in Paraguay that maize is imported from the River Plate countries, chiefly from Argentina, to meet a demand which should be met by an increased production within the Republic. Imports of maize, which is brought in shelled, amounted during the three years 1916 to 1918 to the following totals: 1916, 131,350 kilos; 1917, 1,035,464 kilos; 1918, 206,285 kilos; 1919 (first 11 months), 2,243 kilos.

WHEAT.

Wheat culture in Paraguay is still in the experimental stage. According to Jesuit historians, it was successfully grown in the Misiones country during colonial times, and during the Lopez régime in the last century its cultivation was stimulated by the Government, so that in 1863 the total production is said to have amounted to 600,000 liters. However, whatever had been accomplished in this direction was swept away by the war, and the industry was abandoned until the efforts to revive it were made during the last decade.

Though to all appearances the climate is not suited to the growing of wheat, the promoters of this movement, among whom are the Banco Agricola and the agronomist, Dr. Bertoni, are confident that the cereal has an assured and important place in the future agricultural development of the country. They base their expectations on the adaptability of certain heat-resistant varieties to the cooler temperatures of the southwestern triangle and of the higher lands in the central part of the Republic. Trials made in that zone with the Medeah and Andalusian and Sicilian varieties are declared to have given satisfactory results. One of the principal concerns in these experiments has been to prevent the natural tendency of the grain to run to straw to the detriment of the head. Only about 300

hectares are now under cultivation. In 1918, according to the Banco Agricola, the harvest amounted to over 300,000 kilos, the area of largest production being in the Department of Itaugua.

The principal reason for the anxiety of the agricultural leaders of the country to develop the growing of wheat is to end the large drain of money to Argentina required to pay for the wheat and flour that is imported for the consumption of the nation. The importations of these articles for the period 1910 to 1918 were as follows:

| Years. | Wheat. | Flour. | Years. | Wheat. | Flour. |
|-----------|------------|-----------|-----------------------------|------------|-----------|
| | Kilos. | Kilos. | | Kilos. | Kilos. |
| 1910..... | 9,762,758 | 2,676,027 | 1915..... | 8,639,928 | 1,852,676 |
| 1911..... | 9,020,604 | 3,591,753 | 1916..... | 10,350,952 | 3,815,291 |
| 1912..... | 7,401,541 | 2,868,683 | 1917..... | 14,695,381 | 4,634,144 |
| 1913..... | 10,178,452 | 4,546,478 | 1918..... | 12,669,747 | 6,487,717 |
| 1914..... | 14,160,227 | 1,757,819 | 1919 (first 11 months)..... | 9,902,753 | 6,535,938 |

The wheat imported in 1918 represented a "real value" of 779,066 gold pesos and the flour a still larger value. The combined value of such imports was equal to about two-thirds of the country's exports of tobacco.

The most important establishment in the flour-milling industry is the Molino Nacional. This concern, which is capitalized at 500,000 gold pesos, is owned by the same interests that control the Banco de la República.

The cultivation of such hardy cereals as barley, oats, and rye is in much the same stage as that of wheat. Very satisfactory results are declared to have been obtained from experiments in the acclimatization of barley, especially with the varieties known as Chevalier, Moravian, and a large-grained, huskless variety, which, from its combination of these two qualities, is known as the "gruesa nuda." There is a considerable demand in Paraguay for this cereal in the manufacture of beer. The imports of barley, largely from Argentina, amounted in the three years 1916 to 1918 to the following figures: 1916, 28,175 kilos; 1917, 16,838 kilos; 1918, 33,925 kilos.

Trials made with rye, which is particularly unsuited to warm climates, have not been such as to justify its cultivation on an industrial scale. The same conclusion has been arrived at with regard to the growing of oats. Imports of oats from Argentina during the period 1916 to 1918 were as follows: 1916, 11,245 kilos; 1917, 11,296 kilos; 1918, 38,334 kilos.

Attempts have been made in the cultivation of flax, which is such an important crop in the Argentine Provinces along the lower Parana. Though it can not endure the excessive heat of the Paraguayan summer, its ability to mature when its cultivation is restricted to the remaining months of the year indicate its adaptability to the climatic conditions of the country. However, in the case of this crop, as with others which demand special attention for their acclimatization, the difference between the thoroughly scientific methods of a few advanced agronomists and the routine ways of the mass of the farmers must constitute for some time a serious obstacle to the development of the culture on an industrial scale.

MANIOC.

Manioc is cultivated everywhere throughout Paraguay, though only on a limited scale necessary to supply the needs of the family or the local market. It is a crop of enormous yield, a hectare producing 16,000 or more kilos of the tubers, which vary from 1½ to 2 inches in thickness and from 1 to 2 feet in length. The Banco Agricola estimates the area under cultivation at approximately 39,000 hectares. Yet from such a relatively small area there was harvested in 1918 a crop of some 624,000,000 kilos, and for 1919 the production is expected to be even larger.

At the table of the people of this country manioc virtually fills the place held by bread and potatoes in the diet of Americans and Europeans. It is, in fact, commonly spoken of as the "pan del pais" (bread of the nation). It is usually boiled for eating, and is served alone or in a rather unpalatable stew with meat, this favorite national dish being known as "puchero." From the fariña, or flour made from manioc, there is made a kind of bread called "chipa." Also, as a food for live stock the tuber has few equals.

Though beginnings have been made, little has yet been done toward the industrialization of the possibilities of manioc. It is excellent material for the manufacture of starch, of which it contains a percentage varying from 66 to 73. The percentage of sugar in its composition varies from 10 to 16. Another possible field for the exploitation of manioc is as the base for the manufacture of industrial alcohol.

PEANUTS.

Peanuts are grown very successfully in the northern and central parts of the country. According to the Banco Agricola, there are now about 6,000 hectares under cultivation, and it estimates the crop for 1918 to have been about 12,000,000 kilos. Most of the production is consumed as food, but part of it is utilized in the manufacture of oil, while the shells are ground for making bran. The production of oil and bran for the period 1910 to 1918 was as follows:

| Years. | Peanuts used. | Oil produced. | Bran produced. | Average price per 10 kilos oil. |
|-----------|-------------------|------------------|-------------------|---------------------------------|
| 1910..... | Kilos. 338,000 | Kilos. 72,140 | Kilos. 130,480 | Pesos. 50 |
| 1911..... | 385,000 | 92,100 | 172,700 | 50 |
| 1912..... | 395,000 | 88,700 | 144,900 | 55 |
| 1913..... | 407,000 | 85,580 | 162,240 | 60 |
| 1914..... | 495,000 | 106,700 | 185,000 | 80 |
| 1915..... | 490,000 | 98,000 | 180,000 | 120 |
| 1916..... | 550,000 | 99,925 | 239,325 | 120 |
| 1917..... | 540,000 | 110,000 | 245,000 | 160 |
| 1918..... | 710,000 | 135,540 | 327,860 | 220 |

Exports of peanuts, largely to Argentina, during the period 1914 to 1918 were as follows: 1914, 12,330 kilos; 1915, 101,859 kilos; 1916, 217,668 kilos; 1917, 141,583 kilos; 1918, 23,841 kilos. The principal concern engaged in the manufacture of peanut oil is the house of Boettner & Gautier. This company, which has a capital stock of 160,000 gold pesos, is the most important producer of vegetable oils in Paraguay.

COFFEE.

Coffee is grown in Paraguay in places where the proper combination of soil and climate is found. The center of the coffee-growing industry is in the Department of Altos in the Cordillera region, where it is grown with considerable success on the sheltered hillsides of that district. Dr. Bertoni, the agronomist, has also made very successful experiments with coffee culture in the Alto Parana zone of the country. Imports of coffee during 1918 amounted to 144,239 kilos.

VEGETABLES.

Though nearly all the vegetables of the Temperate Zone give excellent results when grown in Paraguay, the product of the truck gardens of the country is far from sufficient to supply the home demand. The difference is made up by importations from the River Plate countries, and even from Chile and Spain. In 1916, 4,900 kilos of potatoes were imported from France. During the first 11 months of 1919, 320,016 kilos of onions and 1,152,777 kilos of potatoes were imported. The total imports of the principal vegetables during the years 1916 and 1917 were as follows:

| Vegetables. | 1916 | 1917 | Vegetables. | 1916 | 1917 |
|---------------------|---------|---------|-----------------------------|--------|--------|
| | Kilos. | Kilos. | | Kilos. | Kilos. |
| Beans and peas..... | 38,164 | 21,860 | Peppers..... | 1,184 | 860 |
| Onions..... | 225,031 | 170,054 | Garbanzos (chick peas)..... | 10,052 | 8,178 |
| Potatoes..... | 843,749 | 576,145 | Garlic..... | 17,315 | 10,845 |

Canned vegetables are making their appearance in the Asuncion groceries, but their high price puts them beyond the reach of all but a small part of the population. One American packing company holds first place in imports of this kind.

ORANGES.

It is doubtful if there is any part of the world better suited for the cultivation of oranges than Paraguay. The Spanish conquerors found an indigenous orange, the "apepú" of the Guaranis, when they came to the country. The Jesuits introduced seeds from Andalusia and Valencia and gave a great impulse to the cultivation of the fruit throughout the sphere of their influence. The orange trees growing to-day among the ruined cloisters of the great Jesuit churches at Jesus and Trinidad are descendants of trees planted there in colonial times. It is said that Francia and the Lopez rulers commanded their subjects to plant orange trees. What priests and dictators began the birds have continued, so that one finds orange trees in the midst of the virgin forest, 10 or 12 miles from the open country. In fact, the trees grow wild in nearly all parts of the country, though they are noticeably scarcer in the region east of the divide between the Paraguay and the Parana River systems.

The largest planted orchards are located near the railroad and the river, since the marketing of the fruit is not profitable when the groves are more than a very few miles from the train or steamer.

Most of the orchards are concentrated in the area lying to the south of the twenty-fifth parallel and to the west of the fifty-sixth meridian, except for a small zone lying along the Alto Parana between the fifty-fifth and fifty-sixth meridians, south of the twenty-seventh parallel and immediately tributary to the town of Encarnacion. Even within this territory, where the cultivation of the tree has a commercial basis, no care is taken of the orchards. Nothing is known of the proper selection of the seed and no effort is made to combat the rust. Yet, in spite of this total lack of attention, the fruit is of superior quality and good size. The Paraguayan orange is of excellent flavor and very juicy.

Though their cultivation is comparatively new in Paraguay, tangerines, or mandarines, as they are known in the country, have given entirely satisfactory results. The Banco Agricola estimates the area planted to tangerines at about 25,000 hectares.

The commercial importance of the orange of Paraguay largely depends on the demand for it in the Buenos Aires market, where it enters free of duty. This demand has been quite steady for many years, but has begun to suffer from the competition of oranges from other sources. Brazilian oranges, especially the large thick-skinned navels from Bahia, are finding favor in the Argentina market because of their size and fine appearance. Another rival is the orange of the Province of Corrientes, which lies on the southern side of the Alto Parana, directly opposite the orange-producing region of the Paraguayan Misiones. The exportation of oranges from Paraguay during the period 1914 to June, 1919, was as follows:

| | 1914 | 1915 | 1916 | 1917 | 1918 | 1919 (six months). |
|-----------------|-------------|-------------|-------------|-------------|------------|--------------------|
| Oranges..... | 149,151,000 | 216,996,750 | 178,873,000 | 159,430,800 | 80,328,700 | 51,009,150 |
| Tangerines..... | (a) | (a) | 10,509,000 | 15,320,570 | 18,331,150 | 6,116,500 |

* Included with oranges.

The chief points of exportation are, in order of the number of oranges sent out from them, Encarnacion, Villeta, Humaita, and Asuncion. Large quantities are loaded at Villa Rica. Probably not over 10 per cent of the orange production is consumed within the country or exported. The oranges are brought to the railroad or the river in oxcarts and are dumped onto the ground in piles at the station or wharf, where they are submitted to a superficial sorting. They are then put on board the train or boat, generally by women. Here they lie heaped up until they reach their destination, by which time the lower layers, sometimes amounting to a fourth of the cargo, are so badly bruised as to be unsalable. In the case of shipments by rail the jolting of the cars hastens the deterioration of the oranges, and sometimes the cars are sidetracked for days along the way to Buenos Aires, the oranges meanwhile rotting. Some lots are sent in bags, but sacking is very expensive in Paraguay and good box material is difficult to obtain. Very few of the shippers make any effort to appeal to a trade that is somewhat prone to prefer appearance to quality.

Under the present system of marketing, the growing of oranges for sale is not a highly profitable business. In the absence of any

organization for the protection of the growers, such as the California Orange Growers' Association, the latter are at the mercy of the buyers, who represent the Buenos Aires jobbers and who control the fixing of prices for the Paraguayan crop.

Freight rates, per 1,000 kilos of oranges, for shipments to Buenos Aires are as follows: In carload lots (minimum of 12,000 kilos), from Asuncion, 44.63 Argentine pesos (about \$0.86 per 100 pounds); from Villa Rica, 40.39 pesos (about \$0.78 per 100 pounds); from Encarnacion, 35.05 pesos (about \$0.67 per 100 pounds). For less than carload lots the rates are considerably higher.

THE BITTER ORANGE AND ESSENCE OF PETITGRAIN.

An industry of increasing importance in Paraguay is the distillation from the leaves of the bitter orange of what is known as "essence of petitgrain." The bitter-orange tree, the "naranjo agrio" of the country, is found growing wild over the same wide area in which the sweet orange flourishes so spontaneously, though it is of more frequent occurrence in the forest region than is the latter variety. It is distinguishable by the form of the leaves and the greater coarseness of the rind of the fruit, which is also generally larger than the sweet orange. It is also distinguished from the "apepú," or indigenous bitter orange.

The petitgrain industry is centered in a zone about the small town of Yaguaron, although the trees are increasingly exploited outside this area, especially in the region east of the railway. Distilling is carried on in the neighborhood of the villages of Ita, San Jose de la Cordillera, Itacuruby, and Nemby, all of which lie within about 60 miles of Asuncion. The industry dates from the early seventies of the last century when a French botanist, who was interested in the production of "agua de azahar," or the extract of orange blossoms, turned to the utilization of the leaves of the bitter orange tree. He proved the practicability of substituting the leaves for the blossoms as the base of perfumes hitherto derived from the latter source, and thus laid the basis of the present industry. The rather crude method of extraction which he devised has been changed but little since his time, though a process, kept secret by its users, of refining the raw product has since been invented.

The only equipment of those engaged in the industry is a simple still, which can be carried from place to place if necessary. The still is set up in a palm-thatched hut, to which the gatherers bring the leaves for distillation. These are put into a vat into which steam is introduced from beneath. The vapor which results from the saturation of the steam with the volatile oil of the leaves is carried off through a pipe at the top of the vat to the coils of another chamber, where it is condensed by cooling. The oil, which appears on the top of the mixture, is then taken off. The process of further distillation for refining the product thus obtained is carried on by houses in Asuncion, which export the essence to the foreign buyers. Between 500 and 600 pounds of leaves are necessary to produce a quart of the unrefined oil, and the usual still will produce about 4 quarts a day.

The essence is in good demand as a basis for perfumes and flavoring extracts, and about 70 per cent of this demand is supplied by exports from Paraguay. For a long time France took the most of the produc-

tion, but during the last two years a good market has been opened in Spain.

Exports by countries for the years 1915 to 1918 were as follows:

| Countries. | 1915 | 1916 | 1917 | 1918 |
|--------------------|------------------|------------------|------------------|------------------|
| France..... | Kilos. 17,111 | Kilos. 26,064 | Kilos. 29,918 | Kilos. 10,948 |
| Netherlands..... | 7,335 | 3,132 | | |
| United States..... | 5,119 | 3,156 | 8,318 | 6,052 |
| Argentina..... | 4,921 | 7,910 | 11,413 | 4,599 |
| Uruguay..... | 1,425 | 113 | 262 | 341 |
| Italy..... | 1,080 | 1,160 | 2,660 | 1,350 |
| Denmark..... | 884 | | | |
| England..... | 308 | 679 | 1,154 | 253 |
| Germany..... | 240 | | | |
| Spain..... | | 4,021 | 7,421 | 12,380 |
| Brazil..... | | | 266 | 240 |
| Chile..... | | | 86 | |
| Total..... | 38,423 | 46,235 | 61,498 | 36,163 |

The exports credited to Argentina and Uruguay are, of course, largely shipments in transit, the ultimate destination of these consignments being Europe or the United States. For the first 11 months of 1919 exports of petitgrain amounted to 34,193 kilos. Exports in 1918 represented "real values" of 144,652 gold pesos.

The principal exporters of petitgrain are Federico Krauch y Cía., Rius y Jorba, Gaudino, Salsa y Cía., and Lapierre y Cía.

OTHER FRUITS.

Bananas are grown in most parts of eastern Paraguay. Little attention is given to their cultivation, and as a result the fruit is generally small and of poor quality. However, excellent bananas can be raised wherever the proper care is given to the plants. Exports of bananas, chiefly to Argentina, during the years 1914 to 1918 were as follows: 1914, 2,964 bunches; 1915, 3,456 bunches; 1916, 18,369 bunches; 1917, 62,994 bunches; 1918, 34,406 bunches.

Pineapples also do well in Paraguay. Exports to Argentina rose from 1,810 in 1916 to 19,863 in 1918.

There should be an excellent market in Argentina and Uruguay for these and other tropical and subtropical fruits, as well as for early vegetables. But refrigerating facilities are lacking on both the river steamers and the railway. Of several hundred bunches of bananas that were loaded green on the steamer at Asuncion the writer saw nearly a third of them thrown away rotted at Rosario two days later.

The Paraguayan climate is not suitable for the growth of apples and pears, though good peaches are grown. Grapes grow to a good size, but are liable to ripen too quickly or to be blasted by the hot winds before they are ready to pick.

STOCK RAISING.

CATTLE.

Cattle raising is now the most promising industry in Paraguay. Not only is the country admirably adapted by nature for this purpose, but the market now offered by the three American packing plants operating within the Republic has given a great impetus to the development of the industry.

HISTORY OF INDUSTRY.

The beginning of the cattle-raising industry in Paraguay dates from 1546, when a bull and seven cows were brought in from the Portuguese colonies in Brazil. From this nucleus, with the addition of a few head from Peru, the number of cattle rapidly increased and early came to constitute the chief source of wealth of both individuals and Government. The first settlements along the River Plate and the lower Parana received their first breeding stock from Paraguay. By the end of the eighteenth century, according to the credible authority of Felix de Azara, there were some 3,000,000 head in the Province. The financial basis of Francia's dictatorship was the herds of the old "royal estancias," which the Republic had taken over from the Crown along with national independence, and in his war with the Triple Alliance the second Lopez largely maintained his armies on the beef from these same lands. At the end of the war the cattle had virtually disappeared, consumed by one army or the other, so that Paraguay had to begin again its career as a cattle-raising country. A few thousand half-wild animals in the remoter parts of the Republic, where they had been beyond the reach of the armies, together with cattle imported from Corrientes and Brazil, served to reestablish the industry. However, it is believed that only within the last decade has the stock of cattle regained the proportions which it held before 1866.

Although there have never existed facilities for more than an approximate calculation of the number of domestic animals in Paraguay, national authorities on the subject give the following figures for the respective periods:

| Animals. | 1877 | 1886 | 1899 | 1902 | 1915 |
|----------------------|---------|---------|-----------|-----------|-----------|
| Cattle..... | 209,525 | 729,796 | 2,283,030 | 2,460,960 | 5,249,043 |
| Sheep..... | 6,668 | 32,351 | 214,058 | 222,286 | 600,000 |
| Horses..... | 21,140 | 62,386 | 182,790 | 217,572 | 478,000 |
| Mules and asses..... | 2,799 | 4,164 | 7,557 | 14,210 | 35,000 |
| Hogs..... | 3,026 | 12,250 | 23,887 | 37,491 | 61,000 |
| Goats..... | | 11,102 | 32,334 | 49,599 | 87,000 |

More conservative cattlemen doubt if the present stock of cattle amounts to 5,000,000 head, and are disposed to estimate it at about 3,500,000 head.

Herds of cattle are found in all parts of Paraguay, wherever there is a stretch of open land to serve for pasture. The three cattle regions par excellence are the Misiones, the northern section, and the Chaco. Cattle lands can be bought for \$5,000 to \$20,000 gold per square

league (1,875 hectares, or 4,632 acres). Prices in the interior of the Chaco are still lower. Due largely to the advent of the "frigorificos," land values are rising rapidly. A yearly increase of between 20 and 25 per cent in a herd can be expected in Paraguay. With proper breeding methods and the fencing of grazing land the maximum percentage of increase can be maintained. There is a strong tendency toward fencing of lands, as farmers have begun to realize the greater productivity of their herds when they are fenced in. Smooth steel wire No. 9 costs in Asuncion (November, 1919) 7 gold pesos a roll and barbed wire No. 12 sells at 8 pesos. The former contains about 450 meters of wire and the latter about 300 meters.

During 1919 steers sold to the packing houses brought between 40 and 67 gold pesos per head. Four or five years ago the same class of stock was selling for as low as 10 pesos a head.

CATTLE-RAISING REGIONS.

The Misiones includes the belt of country which extends southward from the neighborhood of the railroad about Paraguari, roughly following the general trend of the broken chain of hills of that region, including the villages of Caapucu, San Juan, and Santiago, and thence to its southern outlet at Ayolas on the Alto Parana. Included in the same cattle zone is the lower country of the western part of the triangle, as well as the lands of the Tebicuary's drainage basin lying to the eastward as far as the line of the railway.

There is considerable variety in the topography of this region, but most of the land is low and some of it is subject to inundation. The pasturage of these lowlands is luxuriant, but soft, and, since it is little affected by either heavy frosts or droughts, can be grazed all the year and herds can be driven onto it for "invernada," or winter fattening, when the pasture is eaten close on the higher ground. This is the oldest of the cattle-raising sections of Paraguay and contains a large number of comparatively small estates of 2 to 10 leagues (9,000 to 46,000 acres) in size.

The second zone includes that part of the Republic which roughly lies between the Ipane River and the Brazilian border, a region that is largely tributary to the town of Concepcion. The pasture is generally of good quality and abundant, and since the grasses are harder than those of the Misiones, they produce a better grade of meat. The lowland fattened cattle tend to softness and are liable to lose too much of their weight when driven far to market. On the other hand, the pastures of the north and the Chaco produce a meat that has the proper firmness without being tough. The water supply in this zone is derived from the Apa and the Aquidaban and their numerous tributary streams, and from "tajamares," or large pools, that always contain water. The most modern cattle ranch in Paraguay is located in this region.

The Chaco is the newest of the cattle-raising areas of Paraguay, but is probably the one which holds the greatest future possibilities for the industry. Though there are parts where the pasture is sparse, most of the Chaco is covered with a growth of high grasses that make excellent grazing for cattle. Experiments have been made with foreign grasses, some of which have proven fairly successful. Attempts to raise alfalfa have not given as good results as in Argen-

tina. As in the northern zone, droughts sometimes occur and cause a shortage of pasture, but they are never of as long duration as those which occur in the cattle country of Texas, and, moreover, they happen so seldom as to cause little concern to cattlemen.

In ordinary times there is probably no stock-raising region in the United States that possesses as good natural grazing lands as are found in the Paraguayan Chaco. The water supply is derived from the Paraguay River, from the small streams that flow into it, and from lagoons or pools that seldom dry up. Water is everywhere found near the surface, so that it is easy to dig wells to supply stock where no other supply is available, though farther inland this subsurface water is too salty to drink. There is usually enough salt present in the water of the creeks and pools to free stockmen from the necessity of putting out salt for their herds. The Chaco is also freer from the "garrapata," or tick, than is the country to the east of the river.

Probably the principal disadvantages of the Chaco as a cattle region are its liability to inundations and, on the other hand, the scarcity of water in some places at certain seasons. However, serious floods occur only at long intervals, the two most notable rises being in 1904 and 1919. Considerable numbers of cattle were lost by drowning on the former occasion, but in the flood of May and June, 1919, losses were very few. The rise of the Paraguay, whose backwaters inundate the adjoining zone of the Chaco, is so gradual that owners usually have ample time to drive their herds inland to higher ground or to take them across to the eastern side until the waters have fallen to their normal level.

The second zone of the Chaco, which begins 20 or 30 miles back from the river, is beyond the danger line. Stock raisers in the Chaco must, however, be assured of an outlet on the river for shipment of cattle. In the case of properties that have no river frontage this means that cattle sent out to market must be driven across the lands of other owners, since there are no public roads in this region.

PRINCIPAL CATTLE-RAISING INTERESTS.

Most of the principal cattle-raising interests in Paraguay are included in the following list:

| Name. | Approximate number of cattle. | Location of lands. |
|---|-------------------------------|-------------------------|
| Société Foncière du Paraguay..... | 150,000 | North and Chaco. |
| Central Products Co..... | 100,000 | Chaco and north. |
| Paraguay Land & Cattle Co..... | 45,000 | Do. |
| Gibson Hermanos..... | 15,000 | Do. |
| Leibig's Extract of Meat Co. (Ltd.)..... | 96,000 | North, Misiones, Chaco. |
| La Rural Argentino-Paraguaya..... | 20,000 | Center and south. |
| La Rural Española..... | 44,000 | North. |
| B. Quevedo & Cia..... | 44,000 | North and Chaco. |
| La Ganadería Saccarelo..... | 30,000 | South. |
| Sociedad Anónima "Fuerte Olimpo"..... | 28,000 | Chaco. |
| Berthomier & Calmejane..... | 40,000 | Center and south. |
| Cia. Domingo Berthe..... | 26,000 | South. |
| Blas Gutiérrez..... | 25,000 | Do. |
| Cia. Quebrachales y Estancias Puerto Galileo..... | 25,000 | Chaco. |
| Cia. Zavala..... | 26,000 | North. |
| Percy Hill & Co..... | 16,000 | Chaco. |
| Anglo-South American Meat Co. (Vestey)..... | 15,000 | Do. |
| Carlos Pianell..... | 15,000 | Do. |

The most progressive establishment in Paraguay is that of the French Société Foncière du Paraguay. This company was organized in 1898 and has its central offices at 6 Rue Volney, Paris. It also has an office in Asuncion. The total holdings of the company consists of 268 square leagues of land (1,241,678 acres or nearly 2,000 square miles). Twenty leagues are in the Chaco and the remaining 248 leagues lie between the Aquidaban and the Apa Rivers, extending inland from the Paraguay River in a very irregular form and following the Brazilian border for a considerable distance. These lands are divided for administrative purposes into 20 estancias, each of which is managed by a majordomo. The central administration is located at San Luis de la Sierra.

At the beginning of 1919 the "Foncière" had on its lands 149,143 head of cattle, divided as follows: 529 imported Hereford bulls, 101,639 head of breeding stock, 22,552 steers ready for market, and 24,419 calves. They also had 4,287 head of horses. The force of "vaqueros" in charge of these herds consists of about 200 men.

This company has been very well managed and has paid good dividends to its owners. It has done much to raise the standard of cattle breeding in Paraguay by the introduction of foreign bulls, and by its modern methods has set an example to the cattlemen of the country. It has inclosed its pasture grounds with nearly a thousand miles of wire and has nearly 130 miles of telephone lines connecting its different estancias. These estancias are also equipped with baths for destroying the tick. With its own tannery and shops, the establishment of the "Foncière" is as nearly self-sufficient as it can be made.

NATIONAL ASSOCIATION OF STOCKMEN.

The Sociedad Ganadera del Paraguay is an organization of the leading stockmen of the Republic. It was organized in 1903 and now has about 150 members, some of which are the large companies enumerated above and the rest are individual farmers. It aims to protect the cattle business against hostile or unfair legislation, to study methods of combating pests and diseases, to encourage the improvement of the breed of cattle, and in general to raise the standards and promote the interests of the industry. The headquarters of the Sociedad Ganadera are located at Calle Presidente Franco No. 1, Asuncion.

QUALITY OF PARAGUAYAN CATTLE.

The majority of Paraguayan cattle still consists of the descendants of the old creole stock, whose progenitors date back to colonial times, whether in Paraguay, Argentina, or Brazil. This breed has steadily degenerated through unrestricted interbreeding and through what might be called the traditional *laissez-faire* policy of Paraguayan cattlemen of allowing their herds to run at large with little or no attention. Bulls, steers, cows, and calves were too often permitted to roam the range together throughout the year, without any effort to regulate the breeding season or to select the best cattle for breeding purposes. The natural result has been the development of those marked characteristics that distinguish the creole type wherever similar conditions have prevailed. These are: Little meat, and that strong and tough, the body running to frame, with horns and legs out

of proportion to the rest of the anatomy. "Mucho viento abajo" is the expressive phrase by which the native vaquero characterizes these long-legged steers, meaning that a great deal of wind blows underneath them. A typical creole steer weighs, dressed, between 400 and 500 pounds, those of the south and Misiones averaging lowest.

The principal problem in cattle raising in Paraguay has been the elimination of this type, which is so ill fitted for the demands of the modern meat industry. To this end experiments have been made by continuous crossing with different breeds of imported bulls. On the more progressive estates this process of breeding has already proceeded far, with a corresponding improvement in the size and general qualities of the stock.

In the nineties of the last century Paraguayan cattlemen began the importation of zebu stock from Brazil. Greater immunity from ticks and other pests was claimed for this hardy Indian buffalo, and though its hardiness and resistancy to ticks has been amply proven, these advantages are more than offset by defects which make the animal unfit for the breeding of beef cattle. The zebu gives a false impression of fatness, and such meat as covers its frame is chiefly remarkable for its toughness. It is unmanageable and disposed to turn "bravo," or run wild, and in these circumstances wire fences offer little obstacle to its progress. Even the superiority which was claimed for it as material for oxen has been disproved by experience. To correct the error of its introduction, the cattle-raising interests of the country find it necessary to breed out the zebu blood from the nation's stock of cattle. The Argentine Republic has, moreover, refused to admit cattle that show traces of the zebu.

Among the bulls introduced into Paraguay for the improvement of the native stock Durhams and Herefords have predominated. The principal breeders generally prefer the latter as being less susceptible to cattle diseases, more resourceful in finding food when the pasturage has suffered from drought, and as generally more adaptable to Paraguayan conditions. Some Polled Angus bulls have also been introduced.

THE PARAGUAYAN COWBOY.

The native Paraguayan is good material for the tasks of a cattle ranch. He is an excellent horseman and likes the life in the saddle. With the lasso he has no superior. His wants are few and he will endure hardships and exposure at which the American cowboy, more exigent in the matter of personal comfort, would rebel. In fact, the experiment which was made several years ago by one large cattle company of introducing American cowboys did not prove successful, as most of them were unable to adapt themselves to the conditions of the Paraguayan environment.

The management of the native vaquero offers some special problems to foreign cattlemen. He can not be ordered brusquely, but will do much with tactful management, and especially when his personal loyalty to his employer is aroused. His defects are his conservatism and his lack of initiative. He is slow to change his ways, and, unfortunately, his ways are too often not in accord with modern rules for the breeding of cattle. His inability to assume responsibility for an important task makes the hiring of reliable

foremen and majordomos a particularly important element in the conduct of a cattle ranch. Although Paraguayans, especially men of predominantly Spanish blood, are employed in these capacities, many Argentinians and Uruguayans are also found in such positions.

The superintendents of the larger establishments are usually Europeans, especially Englishmen, though an increasing number of Americans are being employed in this capacity. The cattle peon is paid 20 to 30 paper pesos per day and a majordomo, or superintendent, 100 to 200 gold pesos a month.

DISEASES AND PESTS ATTACKING CATTLE.

Among diseases and pests that attack cattle the hoof-and-mouth disease (*fiebre aftosa*) has spread widely of late among the herds on the east side of the river, where it is much more common than in the Chaco. It usually occurs in a mild form, seldom causing fatalities, but its prevalence at times has caused a temporary shortage of cattle for the packing plants. Imported pedigreed stock is more subject to it than are the native cattle. Though the tick constitutes a problem for cattlemen, the more modern establishments are equipped with baths into which the herds are periodically driven, and ticks have been eliminated from the stock wherever this practice has been continued for some time.

The ailment known as "tristeza" or "melancholy," which is really the "Texas fever," is due to the tick. Cattle which suffer from it become drowsy, refuse to eat, and rapidly lose weight. Imported bulls, before becoming acclimated to the country, are said to be especially susceptible to it. Tuberculosis, which has been present in the neighboring districts of Argentina, has lately begun to make its appearance among Paraguayan cattle. Among other insect pests which annoy cattle in some parts of the country are the "mbarigwi" and the "mosca brava," or horsefly of the United States.

Jaguars, or "tigers," as they are known in South America, are found in the Chaco and in some of the more remote parts of eastern Paraguay. They are given to preying on herds of cattle, though they hardly ever attack human beings. These beasts are being persistently hunted and their numbers are rapidly decreasing. Probably more cattle are lost from bites by poisonous snakes than from jaguars.

Some of the Chaco Indians have been in the habit of cutting out cattle from herds that grazed within reach of their encampments, but losses from this source are so small as not to be taken into consideration in the cattle business. The Indians are not permitted to continue such depredations long.

MARKET FOR CATTLE.

Until recently the sale of cattle in Paraguay was limited to the demands of local consumption, to the one or two saladeros in the northern part of the country which prepared charqui, or "jerked meat," and to shipments to the Argentine packing houses. But the value of the River Plate market was lessened by the high freight charges on cattle shipped to Buenos Aires and by the restrictions placed on the importation of Paraguayan cattle into Argentina. The

establishment of the three American "frigorificos" (packing plants) not only offers a vastly superior market to the product of the Paraguayan estancias and at much higher prices than have ever prevailed before, but the demand for cattle is forcing production to the very limit. The home market for beef probably takes between 100,000 and 125,000 head a year.

The exports of cattle from 1911 to June, 1919, were as follows: 1911, 11; 1912, 137; 1913, 39,564; 1914, 24,385; 1915, 29,509; 1916, 28,400; 1917, 60,804; 1918, 43,149; 1919 (first six months), 4,980. There is an export duty on steers of 1.50 gold pesos and on cows of 3.50 pesos per head.

DAIRY INDUSTRY.

The dairy business has been little developed in Paraguay. The creole cows make poor milk stock, and the natives lack the enterprise necessary for making a success of the industry. The milk which is supplied to consumers in Asuncion sells at from 4½ to 5 Paraguayan pesos per liter. Two foreigners who established a well-equipped "model dairy and creamery" in Asuncion were forced to abandon the business, partly because of inability to secure a dependable supply of milk. Butter, nearly all of which is imported from Argentina, sells at 35 pesos per kilo in Asuncion. In 1918, 28,235 kilos of butter and 7,405 kilos of milk, largely in condensed form, were imported into Paraguay. Two or three brands of American condensed milk are now displayed in Asuncion groceries.

HOGS.

Although there are at present probably not more than 100,000 head in all Paraguay, the country is very well suited for hog raising. For feeding purposes there is an abundance of both maize and manioc. There are a few droves of good hogs where Berkshires or Leicesters or other good breeding stock have been introduced, but most of the native stock of hogs has been allowed to degenerate. They have usually been left to themselves, to graze on coco palm nuts or whatever else they could find, with the obvious result that they tended to revert to the type of their wild kin, the peccaries, or jabalis, which rove over some parts of Paraguay. The native Paraguayans eat little pork, so that the local market is not a large one.

Two Americans at San Salvador are raising hogs successfully on a considerable scale, and are breeding up their stock with Berkshires. The Morris packing plant, at the same place, has put up some of the meat in a form which they label "porc assaisonné." None of the "frigorificos" are prepared to pack pork in large quantities, and the distance is too great and the trip generally too hot to permit the sending of live hogs to Buenos Aires. There should be a good sale in the country for lard to take the place of imported olive oil for cooking purposes.

SHEEP.

Sheep were brought into Paraguay from Peru shortly after the coming of the Spaniards, and most of the creole sheep found in the country to-day are descendants of the old colonial merinos, now de-

generated through unrestricted interbreeding and habitual lack of attention. Though the climate would appear unfavorable to sheep raising, some of the native farmers declare that it offers no obstacle to the industry. In general, the high grasses of the country make better pasturage for cattle than for sheep, but some of the cleaner upland regions of the central part of the Republic seem well suited for this purpose. The Paraguayan "campesino" does not make a good shepherd, as he prefers to be employed at work that will keep him on horseback.

What has been said in regard to the market for pork applies to much the same extent in the case of mutton. Except for the difference in the down-river freights, Paraguayan wool should enjoy an equal opportunity in the world market with Argentine, Uruguayan, or Rio Grande wool. The wool of the native sheep is short and they do not make a good mutton stock. Some breeders, however, have introduced Lincoln, Southdown, or Rambouillet rams and obtained very manifest improvement in the general quality of their flocks.

HORSES.

Most of the horses in Paraguay are descended from the Spanish-Arab stock brought from Spain by the conquerors, but, as with all live stock, the breed of horses was allowed to deteriorate. The native horse of to-day is small and not well proportioned, but is very strong and enduring. Since the war of 1866-1870 considerable numbers of horses have been brought in from Argentina, and even from England, so that to-day good horses are becoming more common in Paraguay, but the same attention has not been devoted to the breeding of horses that has been given to the improvement of the stock of cattle. Horses are little used as draft animals. Prices of horses in Paraguay range from 75 to 200 gold pesos.

One of the principal obstacles to the breeding of horses in Paraguay is the disease known as "mal de caderas." The better class of imported horses are particularly susceptible to the disease, which seldom attacks the hardy creole animals. It appears to be a form of cerebrospinal fever. The first symptoms are loss of control of the hind legs, so that the horse soon sinks to the ground and is unable to stand again. The disease is incurable, and horses are killed as soon as they show evidence of it.

MULES.

Mules are much used for drawing carts in the towns and for pack trains in the country districts, as well as for riding. Though smaller than the American mule, the Paraguayan mule is hardy and otherwise of good quality. There is always a good market for mules, not only within the Republic, but in the neighboring countries, and the breeding of them for sale is a business that offers good returns.

MEAT PACKING.

DEVELOPMENT OF INDUSTRY.

The most important recent development in Paraguay has been the growth of the meat-packing industry.¹ The business dates from the latter years of the war and was only fully organized during the early part of 1919. It has already given a great impetus to cattle raising and to the general economic development of the Republic as a whole. The industry is entirely American, and is represented by three plants—that of Morris & Co., at San Salvador, Swift & Co., at Zeballos-cue, and the Central Products Co., at San Antonio. Though these plants are locally known as "frigorificos," they are, as a matter of fact, not freezing establishments, but are devoted to the canning of meat. The Central Products Co. is making the necessary installations to begin chilling operations in 1920.

Previous to the founding of the "frigorificos" the preparation of meats on a commercial scale was limited to the "saladeros," which made "charqui," or jerked meat. The most important of these saladeros was that of Risso, situated on the Alto Paraguay near the Brazilian border. This and the less important plants have been forced to close because of their inability to compete with the "frigorificos" in the cattle market. Meanwhile the charqui business has been pushed farther up the river into the Brazilian State of Matto Grosso.

CONCESSIONS TO PACKING COMPANIES.

The pioneers of the meat-packing industry in Paraguay were Messrs. F. H. T. Walton, C. W. P. Patton, and G. L. Rickard. The three companies with which these men were connected obtained concessions from the Paraguayan Government, all of which were similar in their terms. The principal provisions of the concession granted to the Central Products Co. in the early part of 1917 were as follows: (1) The right to establish a matadero or killing plant and to construct a frigorifico, (2) to construct wharves, (3) to manufacture by-products and export them, (4) to operate its own boat service on the river, (5) to cultivate artificial pastures, (6) to introduce improved breeding cattle. The company was also to enjoy the following privileges: (1) Freedom from all import duties on machinery and all other materials required for the installation of its plant, (2) the free introduction of cattle on the hoof, (3) the free exportation of all its products, (4) freedom from taxation during the operation of the concession, (5) freedom from port dues, when use is not made of public wharves. The duration of the concession was set at 25 years. The concessionaire was to deposit a guaranty of 10,000 gold pesos, to be surrendered to the Paraguayan Government in case the company should not have invested 200,000 pesos in works by the end of three years. Within five years the company was

¹ Since this was written there has been a marked slump in the meat-packing industry in Paraguay. The San Salvador plant has been closed; the Zeballos-cue plant is producing charqui; and that at San Antonio has cut down production considerably below the standard of 1919.—W. L. S., November, 1920.

obliged to have a plant equipped with capacity to handle 500 head of cattle a day.

Although, in accordance with their concessions, the frigorificos are not taxed directly, a tax of 2 gold pesos per head on all cattle sold to them actually amounts to an indirect impost on the packing companies. This tax is collected by the companies themselves, who turn it over to the National Treasury. Attempts have been made in Congress to raise this tax to 5 pesos per head.

A Government meat inspection law provides for the rigorous examination of all stock killed for packing.

SUPPLY OF CATTLE.

The packing companies have already had difficulties in securing the necessary supply of cattle. The San Antonio plant is now drawing on the Argentine Territory of Formosa, which lies directly across the river. The Morris plant at San Salvador has brought in cattle from across the Brazilian border, but Brazilian export taxes and the competition of the national packing industry do not allow of much further expansion in that direction. The Paraguayan industry must largely depend on increased production of cattle within the country. At present the three plants combined require between 700 and 800 head a day, and, if running at their full capacity, would need about 1,000 head. Steers sold to the "frigorificos" have brought upward of 40 pesos gold per head, and the maximum price of 67 pesos was reached in August, 1919. When it is considered that these steers only represent a dressed weight of between 400 and 500 pounds, the urgency of a drop in the price of cattle is evident. The companies have also been seriously hampered by the exchange situation and by labor troubles.

The demand for canned meat for the armies in Europe gave the first impulse to the business, and the termination of the war cut off this market in November, 1918. The market now largely depends on the continued demand for canned meat in the European countries which were engaged in the war. The installation of freezing equipment should, however, insure the industry against a possible decline in the market for canned meat. This in turn will demand a radical improvement in the Paraguayan breed of cattle, which at present generally lack the fat required for freezing stock.

THE THREE PACKING PLANTS.

FRIGORIFICO SAN SALVADOR DEL PARAGUAY.

This plant was originally constructed by Dr. Kemmerich, long connected with Liebig & Co., and was intended for the preparation of beef extract, in which business Dr. Kemmerich was a recognized expert. Hermann Krabb & Co. acquired the plant from Dr. Kemmerich, but never operated it. It then passed into possession of G. L. Rickard, who transferred it to the Morris interests. Installations were then made for canning, and operations were begun in June, 1918.

San Salvador is situated on the Alto Paraguay nearly 300 miles above Asuncion, with which it has communication each week by two regular boats of the Mihanovich Line. The packing company has

leased 20 square leagues (93,000 acres) of land in the neighborhood, with an option to buy. There is an office in Asuncion, and the Buenos Aires office is located at Calle Maipu 231. The paid-up capital of the company is \$400,000.

During its period of operation the San Salvador plant has killed between 60 and 150 head of cattle a day, but has a capacity of 300 a day. It puts up canned beef, canned tongue, beef extract, potted ham, and "porc assaisonné."

COMPAÑIA PARAGUAYA DE FRIGORIFICO Y CARNES CONSERVADAS.

The beginning of this company dates back to the acquisition, by Swift & Co., of a small plant at Zeballos-cue, which had been put up by F. H. T. Walton for some Paraguayan interests. Mr. Walton in turn acted as intermediary for the sale of the property to the American packers. After its purchase by Swift & Co. the establishment was greatly enlarged and improved by the installation of an up-to-date canning equipment.

Zeballos-cue lies on the Paraguay River and about 5 miles above Asuncion, with which it has daily communication by the company's launch, as well as by a road which leads to the Trinidad station of the Central Paraguay Railway. The site is an excellent one, and the company has its own wharf, where cattle are unloaded and its products shipped. The administrative offices are located in Asuncion. A. K. Lytle is general manager. The Buenos Aires offices are located at Calle 25 de Mayo 195. The capital stock of the company is \$500,000.

This plant has killed between 150 and 300 head of cattle per day. During 1918, 907,200 6-pound cans of meat and 3,657 cans of ox tongue were put up.

CENTRAL PRODUCTS CO.

The business of the Central Products Co. was largely organized in Paraguay by C. W. P. Patton, who obtained the concession from the Paraguayan Government. The work of constructing the plant at San Antonio was greatly delayed by the difficulty of securing materials during the war. The high prices of such materials also added considerably to the cost of the establishment, which was, however, completed in spite of serious obstacles. Although the company desired to have the plant completed in time to aid in supplying the European armies with canned meats, the necessary equipment was not installed until after the signing of the armistice.

San Antonio is located on the river about 15 miles below Asuncion, almost directly opposite the mouth of the Pilcomayo. The company's boats ply between the two points twice each day. The plant is located on ground that is well above the flood mark of the Paraguay and possesses one of the best ports on the river. The main building is a three-story structure of reinforced concrete. Work is also under way on a five-story building for the preparation of chilled beef. The most modern equipment is used everywhere. There are large machine shops, stores, an ice plant, brick kilns, and an electric light plant.

The offices of the general manager and of the traffic, purchasing, and cattle-buying departments are located in Asuncion. The accounting department and the general administrative offices are situated at San Antonio. The Buenos Aires offices are located at Calle Sarmiento 443. The home office of the company is at 120 Broadway, New York City.

The Central Products Co. is a subsidiary of the International Products Co., and is itself capitalized at \$1,500,000. The International Products Co. is in turn controlled by the American International Corporation. Among the original board of directors of the International Products Co. were William M. Baldwin, Charles E. Perkins, German P. Sulzberger, Joseph E. Stevens, J. Ogden Armour, Percival Farquhar, and Philip W. Henry. In November, 1919, both companies were jointly incorporated under Paraguayan law as the "Compañía Internacional de Productos." The quebracho extract business of these interests has hitherto been under the direct management of the International Products Co., whereas the meatpacking business was the special province of the subsidiary company. However, both branches have been under the same general manager.

The administrative officials of the company and most of the office employees are Americans. Those who live at San Antonio are provided with living quarters in modern and attractive brick houses, especially built for the purpose. In fact, all three companies have provided well for their employees in this regard. The labor force, which consists of about 1,400 men and women, is housed in comfortable and sanitary wooden houses, which are supplied free of charge to the workmen. Thus a considerable town has been built up about the "frigorifico." Moving pictures and a night school are features of the company's policy in caring for its workmen.

The plant is now (November, 1919) killing about 400 head of cattle a day. Though most of these cattle are bought from individual farmers, the company is raising an increasing number on its own lands. The International Products Co. possesses nearly 300 square leagues of land. This consists of its Puerto Pinasco and Pedernal properties in the Chaco and of its Postillon estancias on the east bank of the Alto Paraguay. It also has leased 5 leagues of land on the Argentine side of the river opposite San Antonio. The company has its own fleet of tugs and lighters, with which it brings its cattle down the river and carries the finished products to Buenos Aires.

STATISTICS OF THE INDUSTRY.

Statistics of the industry, including the Saladero Risso, during 1918 are given in the following table:

| | Zeballos- cue. | San Salvador. | Saladero Risso. | Total. |
|---|-------------------|------------------|--------------------|-----------|
| Steers killed.....number.. | 31,459 | 15,490 | 7,841 | 54,790 |
| Cows killed.....do.... | 22,945 | 10 | 1,335 | 24,290 |
| Value of stock.....gold pesos. | 1,038,928 | 527,306 | 265,362 | 1,829,596 |
| Average weight per animal.....kilos. | 200 | 190 | | |
| Salaries and wages paid.....gold pesos. | 327,552 | 60,776 | 18,134 | 406,462 |
| Employees: | | | | |
| Men.....number.. | 650 | 460 | 48 | 1,158 |
| Women.....do.... | 350 | 70 | | 420 |

The Zeballos-cue plant began operations in March and San Salvador in June, 1918. The exports during the same year amounted to 1,987,612 kilos of canned beef, 6,000 kilos of beef extract, and 17,020 kilos of canned tongue. During the first six months of 1919, 2,112,669 kilos of canned beef and 13,965 kilos of extract were exported. Large consignments of corned beef were sent to Belgium during 1919. Total exports of packing-house products, exclusive of by-products, amounted to 5,313,752 kilos during the first 11 months of 1918.

Shipments of jerked beef from 1914 to June, 1919, were as follows: 1914, 877,268 kilos; 1915, 1,429,842 kilos; 1916, 473,010 kilos; 1917, 1,033,910 kilos; 1918, 791,514 kilos; 1919 (six months), 15,895 kilos.

The exports of by-products of the cattle industry from 1914 to June, 1919, were as follows:

| Products. | 1914 | 1915 | 1916 | 1917 | 1918 | 1919 (six months) |
|---------------------|---------|---------|---------|---------|---------|-------------------|
| Hides: | | | | | | |
| Salted.....number.. | 196,599 | 176,094 | 130,436 | 181,379 | 105,625 | 59,227 |
| Dry.....do.... | 69,301 | 110,183 | 53,318 | 59,965 | 87,105 | 26,158 |
| Yellow.....kilos.. | 163,870 | 298,818 | 81,086 | 237,418 | 224,501 | 92,522 |
| Horns.....do.... | 190,556 | 45,682 | 33,436 | 48,600 | 62,990 | 135,665 |
| Hair.....do.... | 66,624 | 81,517 | 98,014 | 94,751 | 36,901 | 41,233 |

The United States is one of the largest buyers of Paraguayan hides.

The total value of all exports of products of the stock-raising and meat-packing industries during the years 1914 to 1918 was as follows, figures given being "actual values" in gold pesos as computed by the National Statistical Office: 1914, 2,176,860 pesos; 1915, 2,765,681 pesos; 1916, 2,322,116 pesos; 1917, 3,923,781 pesos; 1918, 4,216,859 pesos. In 1918 this represented 37 per cent of the total exports, as against 32.4 per cent for products of the forest industries (lumber, quebracho, etc.) and 30.2 per cent for agricultural products.

FOREST INDUSTRIES.

LUMBER AND TIMBER.

The timber industry is one of vast possibilities in Paraguay. Almost two-thirds of the area of the country lying to the east of the river is heavily forested. Great belts of virgin forests extend for hundreds of miles, broken only by islands of open land and by the narrow "picadas," or cart trails, that cut transversely across the areas, sometimes for a distance of 30 miles or more. Only the edge of this forested area has been touched, where lumber camps have sprung up within reach of the two great rivers or near the railroad. Two railway lines have been built for the express purpose of tapping rich timber zones, that from Concepcion to Horqueta and the Borja branch of the Central Paraguay. Difficulties of transportation still present an almost insuperable barrier to the development of the timber resources of the greater part of the Republic.

LOGGING OPERATIONS.

The luxuriant growth of the vegetation that results from the combination of a warm climate, rich soil, and heavy rainfall makes logging operations in the Paraguayan forests very difficult. A tangled mass of undergrowth, small trees, and creepers opposes what appears to be an almost impenetrable wall, through which roads have to be cut at great cost and effort in order to reach the trees and bring out the logs. Moreover, stands of a single species of tree are not found, but many varieties may exist on a very limited area. For example, a lumberman who is making up a shipment of lapacho logs may find only two or three trees of this species scattered through an acre of heavy forest. After the trunk has been sawed into the proper lengths the logs may be taken out just as they are or they may be squared for shipment as beams. The work of squaring the logs is done with ax and adze, in the use of which the native workman is very skilled. The Paraguayan who has been raised in the "monte" country is a good woodsman and is able to endure the hard conditions of life in the timber workings. For transportation to the river or rail the logs are slung between two high wheels and hauled out by teams of oxen. In the case of the lighter woods the nearest stream is utilized to float the logs down to the Parana or the Paraguay, where they are made up in rafts or loaded onto barges.

The forests of Paraguay are chiefly remarkable for the large variety of hardwoods which they contain. Several of these are of a density greater than water and are almost indestructible, even when exposed to the weather or when buried in the ground or submerged in water. Beams have been found that had lain buried in the earth since colonial times and showed no sign of deterioration. Due to

the character of their grain, some of these hardwoods are less elastic than others, ranging in flexibility from the guayacan, of which the Chaco Indians make their bows, to the heavy but brittle urunday-mí, which a sudden blow may break at right angles to the vein of the wood. On the other hand, there are a number of varieties of softwoods, or soft hardwoods, such as the timbo and the cedro. However, the country is particularly lacking in conifers.

PRINCIPAL WOODS AND THEIR CHARACTERISTICS.

The principal woods, classified according to the uses to which they are put, are as follows:

Ties, piling, bridges and trestles, heavy planks and beams: Quebracho colorado, urunday-mí, curupay, lapacho.

General construction purposes: Laurel, curupay, ybirá-pytá, cupai, cedro.

Furniture and cabinetmaking: Petereby, cedro, palo de rosa, trebol, tatayba, jacarandá, ybirá-ro, ybirá-pytá.

Naval construction: Ybirá-ro-mí, tataré, lapacho, petereby.

Figures regarding dimensions of trees, specific density, and strength tests of several of the different woods are given in the following table:

| Popular name. | Scientific name. | Weight per cubic meter. | Average tests per square centimeter in cross section. | | | | Average trunk dimensions. | |
|---------------------------|---------------------------------------|-------------------------|---|-----------------|-----------------|-----------------|---------------------------|---------------|
| | | | Elasticity. | Tension. | Compression. | Flexion. | Diameter. | Height. |
| Quebracho colorado. | <i>Quebrachia lorentzii</i> . | 1,282-1,392 | Kilos. 148,000 | Kilos. 1,196 | Kilos. 1,220 | Kilos. 1,543 | Meters. 1.00 | Meters. 15 |
| Quebracho blanco. | <i>Aspidosperma quebracho blanco.</i> | 810-1,080 | 55,000 | 600 | 540 | 433 | .30 | 5 |
| Urunday..... | <i>Astronium juglandifolium.</i> | 1,110-1,270 | 114,000 | 1,148 | 966 | 1,125 | .50 | 6 |
| Nandubay..... | <i>Prosopis algarrobilla.</i> | 1,090-1,211 | 123,000 | 1,108 | 633 | 1,200 | .15 | 3 |
| Algarrobo..... | <i>Prosopis sp.</i> | 809 | 55,000 | 440 | 404 | 663 | .50 | 4 |
| Curupay..... | <i>Acacia atramentaria.</i> | 977-1,172 | 150,000 | 1,350 | 1,010 | 1,283 | .40 | 8 |
| Lapacho..... | <i>Tabebuia flavescens.</i> | 952-1,072 | 153,000 | 1,133 | 927 | 1,543 | .40 | 7 |
| Laurel blanco..... | <i>Nectandra amara.</i> | 570-750 | 153,000 | 1,133 | 927 | 692 | .25 | 4 |
| Palo blanco..... | <i>Calycocephalum multiflorum.</i> | 918-1,027 | ----- | ----- | ----- | ----- | .30 | 5 |
| Petereby..... | <i>Cordia frondosa.</i> | 619-850 | ----- | ----- | ----- | ----- | .60 | 18 |
| Timbo..... | <i>Enterolobium timbouva.</i> | 328-440 | 115,000 | 1,250 | 855 | 663 | .70 | 14 |
| Cedro..... | <i>Cedrela brasiliensis.</i> | 575-658 | 99,000 | 468 | 460 | 700 | .60 | 7 |
| Guayacán negro..... | <i>Cesalpinia melanocarpa.</i> | 1,113-1,284 | 150,000 | 1,350 | 1,010 | 1,732 | .30 | 5 |
| Incienso..... | <i>Myrcarpus fastigiatum.</i> | 860-945 | 150,000 | 1,350 | 1,010 | 1,270 | .40 | 6 |
| Ybirá-pytá..... | <i>Peltophorum vogelianum.</i> | 745-1,038 | 114,000 | 1,148 | 966 | 1,210 | .90 | 5 |
| Ybirá-ro..... | <i>Ruprechtia excelsa.</i> | 765-875 | ----- | ----- | ----- | 1,223 | .50 | 7 |
| Palo santo (lignum-vite). | <i>Guajacum arboreum.</i> | 1,216-1,303 | 100,000 | 1,226 | 633 | 1,081 | .25 | 6 |
| Palma negra..... | <i>Copernicia cerifera.</i> | 593-660 | ----- | 397 | 290 | 876 | .25 | 7 |
| Tataré blanco..... | 970 | ----- | ----- | 1,100 | 760 | 1,270 | ----- | ----- |

More details concerning the characteristics of some of the Paraguayan woods will be found in the following list:

Álgarrobo.—Found chiefly in the Chaco. Of little commercial importance. Contains tanning and dye materials.

Cedro.—This, the Spanish cedar, is an easily workable soft hardwood, and is in demand in the Argentine lumber market for general

construction purposes, particularly for interior finishings. It is found in large quantities, especially in the southern part of the country.

Curupay.—An extremely hard, durable, reddish wood. Most common in the northern part of the Republic. Besides its uses as a construction wood and for ties and piling, tanning material is made from its bark.

Guayacan.—This tree is found in the lowlands of the Chaco but never in large quantities. It is a dark-colored wood and takes an even darker tinge when exposed to the air.

Guayaybi.—This wood somewhat resembles ash. It is very elastic, flexible, and durable. It is used for making tool handles, carts, etc. Its specific weight is about 1.1.

Incienso.—A resinous and aromatic wood, reddish brown in color. Is used for general construction purposes and for furniture making.

Jacaranda.—A dark-colored hardwood of northern Paraguay. Is used in cabinetmaking.

Lapacho.—Lapacho wood is of a greenish-yellow color. The wood of the lapacho negro, however, is dark brownish in color. The tree is easily distinguishable from a distance by its great masses of pink flowers. The wood is much used in Paraguay for making spokes for carts and for "chatas," or barges, though for the latter purpose it is inferior to *ybirá-ro-mí*. There is a strong demand in Argentina for this wood.

Palms.—Commercially the most important of the different species of Paraguayan palms is the caranday, which is common in the Chaco. Not only is it widely used as material for ranch houses, but large amounts are exported for use as telegraph poles.

Palo blanco.—An attractive-appearing, light-colored wood, used in furniture making and for interior finishing.

Palo de rosa.—This is not the ordinary rosewood of commerce, as its local name would suggest. It is a comparatively light-weight wood of beautiful tints and is an excellent material for cabinet-making.

Palo santo (lignum-vitæ).—This is a heavy, dark, greenish colored wood, with a very marked scent. It is found in the Chaco, but never in large quantities. It is sometimes used in place of bronze for bearings in engines and screw shafts. Pulley and block wheels are also made of it.

Petereby.—The grain and color of petereby is much like that of American walnut. It takes a high polish and is excellent wood for furniture and cabinetmaking, for which purposes it is now being used in considerable quantities.

Quebracho.—A fuller description of the different varieties of quebracho will be given in the section on quebracho extract as a tanning material.

Tatayba.—A strong, yellowish colored wood, found largely in the region between the Aquidaban and the Apa Rivers in the northern part of the Republic. Its specific weight is about 1.15.

Tataré.—A golden-yellow colored wood, somewhat resembling satinwood and taking a very high polish. Chests made of tataré preserve their contents from damage by insects.

Timbo.—This is one of the lightest of Paraguayan woods. The Indians of the country make their dug-out canoes of it, and it is much used in building work where strength and finish are not the most important considerations. It is also used as material for box making, but for this purpose it is inferior to American or Brazilian pine.

Trebol.—Very attractive furniture is made in Paraguay of this wood, which takes a finish much like that of Circassian walnut.

Urundey-mi.—This wood is similar to quebracho colorado, both being of a red color and having remarkable strength and durability. There are several different species of the urundey, including that known as urundey-pará.

Ybirá-ro.—The wood of this tree is very hard but flexible, and is finding increasing use in the building of boats, where its elasticity enables it to distribute the force of a shock without breaking. It is found chiefly in the eastern part of the Republic. There are several species of the ybirá.

MARKETS FOR PARAGUAYAN WOODS.

Buenos Aires is the principal market for Paraguayan woods. Timber is shipped as rough logs (rollizos), with the logs square faced (vigas), and as sawed lumber. For transportation to Buenos Aires the railroad and river boats have been used, but shippers of timber have lately begun to send rafts or logs down the river. When rafts consist partly of hardwoods it is necessary to alternate logs of softwood with those that are heavier than water. Thus, two or three cedar logs are usually included for each log of lapacho or curupay. These rafts are taken to Buenos Aires by tugs, the trip requiring 40 days or more.

Freight rates between Paraguayan points and Buenos Aires on lumber in the beam are as follows: By rail, Asuncion to Buenos Aires, 31.73 Argentine pesos per metric ton; Encarnacion to Buenos Aires, 26.46 pesos per metric ton. By river the rate from Asuncion is 35 pesos per metric ton.

Conditions in the lumber markets of the River Plate countries are described in detail in "Lumber Markets of the East Coast of South America," Special Agents Series No. 112,¹ of the Bureau of Foreign and Domestic Commerce. In that report Roger E. Simmons says: "Considerably over 70 per cent of the lumber and sawlogs coming to the River Plate from other South American countries should be credited to Paraguay." In this trade Brazil holds second place. In normal times heavy imports of pine and spruce are received from the United States and Canada. The principal Paraguayan woods in demand in Buenos Aires are cedar, curupay, lapacho, ybirá-ro, petereby, and incienso. Paraguayan lumbermen anticipate a considerable demand in Europe for the woods of the country for use in reconstruction work.

¹ For sale by the Superintendent of Documents, Government Printing Office. Price, 25 cents.

EXPORTS OF TIMBER.

Exports of timber from Paraguay for the years 1914 to 1918 and the first half of 1919 were as follows:

| Timber. | 1914 | 1915 | 1916 | 1917 | 1918 | 1919 (first six months). |
|-----------------------------------|-----------|-----------|-----------|------------|------------|--------------------------------|
| Beams.....kilos..... | 41,022 | 37,071 | 38,000 | 39,492 | 47,228 | 16,727 |
| Sawed lumber, cubic meters a..... | 1,935 | 967 | 1,315 | 1,777 | 4,533 | 1,982 |
| Quebracho logs.....kilos..... | 8,417,136 | 2,322,726 | 1,006,009 | 1,645,081 | 522,296 | 980,000 |
| Other logs.....do..... | 6,881,982 | 5,185,979 | 8,607,862 | 38,955,374 | 47,710,196 | 21,458,513 |
| Posts.....number..... | 80,795 | 57,894 | 52,513 | 47,586 | 24,980 | 22,334 |
| Staves.....do..... | 499,417 | 691,202 | 544,221 | 1,026,066 | 1,284,717 | 443,524 |
| Palms.....do..... | 5,320 | 6,827 | 7,942 | 19,434 | 11,370 | 2,555 |

a One cubic meter equals 424 board feet.

The total value of the exports of timber products, excluding those destined for the manufacture of tanning material and dyestuffs, in 1918 was given by the National Statistical Office at 1,819,532 gold pesos. Excepting fence posts, telegraph poles, and quebracho logs, the majority of which are sent to Uruguay, Argentina took between 90 and 95 per cent of the other classes enumerated in the above table.

The designation "beams" is a translation of the classification given in the Paraguayan statistics as "maderas en vigas labradas"; that is, logs which have been square-faced for shipment. Because of the custom of calculating the quantity of timber shipments according to weight or number of logs, it is impossible to give the exact amount of these exports in terms familiar to the American lumber trade.

The Paraguayan Government levies the following export duties on shipment of timber products:

| | Gold pesos. |
|--|----------------|
| Beams (vigas labradas) in general..... | each... 1.30 |
| Palms..... | do.... .05 |
| Logs, other than those of quebracho..... | do.... 1.30 |
| Quebracho logs..... | per ton... .50 |
| Ties..... | each... .03 |

COMPANIES ENGAGED IN TIMBER OPERATIONS.

The principal concerns engaged in the timber industry in Paraguay are as follows:

Fassardi y Cía. (Asuncion). This company exploits the timber-lands tapped by the Borja branch of the Central Paraguay Railway. It has leased these lands from the Compañía de Maderas Argentino-Paraguaya, which belonged to the same interests that control the railway and the large yerba company, La Industrial Paraguaya. It operates a large, well-equipped sawmill in Asuncion, to which the logs are brought from the camps located near the end of the Borja-Iguazu branch of the railway at Charara.

Compañía Industrial y Commercial del Norte del Paraguay (Concepcion). This company is the result of a combination of the firms of Guggiari, Gaona y Cía. and Quevedo y Cía., and has important business interests in northern Paraguay. Its authorized capital is 1,500,000 gold pesos and paid-up capital 500,000 pesos. Among its

properties is the 22-mile railway between Concepcion and Horqueta. Its sawmill is situated at Concepcion.

Devoto, Carbone y Cía. This company has taken over the properties of the Compañía Forestal del Paraguay. Its center of operations is at Puerto Ybapobo, a short distance below Concepcion on the Paraguay River. It operates a logging railway about 40 kilometers (25 miles) in length.

Manuel Espinosa (Asuncion). Señor Espinosa was formerly a member of the firm of Fassardi y Portaluppi, but is now engaged in the timber-shipping business for his own account.

Compañía Domingo Barthe e Hijos. This company operates on both sides of the Alto Parana above Encarnacion-Posadas. Besides its timber interests, the company is engaged in the cultivation of yerba mate and in general mercantile business, and also operates a river navigation service. Its central offices are in Buenos Aires, and its capital stock amounts to \$4,000,000 pesos gold.

R. & M. Herrera Vegas. This Argentine firm has timber workings, stone quarries, yerba plantations, and agricultural colonies on the Paraguayan side of the Alto Parana a short distance above Encarnacion.

A. Perasso y Cía. (Encarnacion). This company operates a sawmill at Puerto La Mina on the Alto Parana.

Compañía de Tierras Carlos Casado, Ltda. (Buenos Aires and Puerto Casado, Paraguay). Though primarily interested in the manufacture of quebracho extract, this Argentine company also does a general timber business on the basis of its large holdings in the northern part of the Chaco.

Other persons and firms engaged in the timber industry are: Yuty Timber Co. (Ltd.), Yuty; Lloret Hermanos, Asuncion; José Quintana, offices in Asuncion, sawmill at Villa Rica; Faraone, Buzarquis & Cía., Villa Rica; Vicente Nogués, Villa del Rosario; Nicolás Forrells, Concepcion; Ayala y Vega, Encarnacion; Jorge R. Sacarrello, Caanabe, Department of Paraguarí; Luis R. Miltos, Bogadocue, near Concepcion; Antonio Micó, Villa Rica; Ortaza y Toboada, Asuncion; M. Achón, Asuncion; Tomás Caro, Asuncion; H. E. Stanley, San Bernardino; Ocampo y Cía., Villa Rica; Andrés Rivarola, Caballero; Grenno y Cía., Encarnacion.

The International Products Co. has a large and well-equipped sawmill at Puerto Pinasco, but its output is exclusively for the use of the company. Some of the other large industrial establishments operate their own sawmills.

La Industrial Paraguaya, while not essentially a lumber company, possesses vast resources of merchantable timber, some of which is worked through arrangement with regular lumbermen.

Some of the concerns listed above are only buyers and exporters of logs and do not operate sawmills. Others, particularly the smaller ones, and including several unimportant mills not enumerated here, limit their operations to the sawing of lumber for the local trade. This local demand is for material for general building purposes, sash and doors, furniture, carts, boats, barrels, and boxes. The meat-packing industry has given a considerable impulse to the making of boxes, for which, however, the native woods are inferior to American or Brazilian pine. Some of the mills that operate on a small scale

work intermittently, closing down when unable to obtain a supply of logs.

Ordinary lumber for building purposes sells in Asuncion at \$75 to \$80 gold per 1,000 feet. The high costs of lumbering and transportation explain such a price in a country where timber is abundant. The Central Products Co. has actually found it cheaper to bring oak lumber from the United States for the construction of its freezing plant than to buy the hardwood lumber of the country.

QUEBRACHO.

One of the most important industries of Paraguay is the manufacture of tanning extract from the quebracho tree. This business is located in Paraguay and Argentina, the former country supplying about 18 per cent of the total production and the latter about 82 per cent. The industry in Paraguay represents a total investment of about \$8,500,000 of capital.

QUEBRACHO EXTRACT AS A TANNING MATERIAL.

As a tanning agent quebracho extract is not used alone, but is mixed with chestnut, oak, hemlock, mangrove, or some other material. The chief advantage of quebracho for this purpose is that it hastens the tanning process, reducing the time required by several months. It was this particular virtue of quebracho extract that caused such a great demand for it during the war, when the rapid tanning of vast quantities of shoe leather was imperative. Quebracho increases the weight of the leather 30 per cent over the weight of the original hide. In its effect on the wearing quality of leather it occupies the first place after chestnut bark. When mixed with certain nontanning materials quebracho improves the natural color of leathers and facilitates the fixing of dyes. However, in spite of the strong demand for quebracho in the leather industry, it is not indispensable. Its place can be taken by other tanning substances, though the latter may lack the peculiar advantages possessed by quebracho and they are also generally more expensive.

HISTORY OF THE INDUSTRY.

The tanning properties of quebracho were first suspected by the owners of a sawmill in the quebracho zone of Argentina, when they observed the strong reddish tinge which the sawdust gave to the water. The wood was first exhibited in Paris in 1867. Tests of its tannin content were made, and during the next two decades the beginnings of the industry were laid, most of the pioneering work being done by Germans. The business was at first limited to the exportation of logs, from which the tanning extract was manufactured in Europe. The first "quebrachales" to be exploited on a considerable scale were those of F. Portalis & Co., in the neighborhood of Reconquista in the Argentine Province of Santa Fe. The first extract plant to be established in either Republic was that of Carlos Casado & Co., which was founded in the Paraguayan Chaco in 1889. The manufacture of extract in Argentina has been developed since 1900.

PROPERTIES OF THE QUEBRACHO TREE.

The tanning extract is derived from the red quebracho, or *Quebracho colorado*, as distinguished from the *Quebracho blanco*, or white variety. The true quebracho, the *Loxopterygium*, or *Quebrachia lorentzii*, belongs to the family of the *Anacardiaceæ*, and to the genus *Quebrachia*. There are three different varieties of the *Quebracho colorado*. Thus, in addition to the *lorentzii*, there are the *marginata* and the *balanzal*, which are locally known, respectively, as the "macho" (male) and the "coronillo," in distinction from the term "hembra" (female) applied to the *lorentzii*. The macho and coronillo are found largely in the Argentine Provinces of Santiago del Estero, Tucuman, and Salta. Though they have a tannin content of about 15 per cent, they are exploited only as material for posts and ties.

The tannin content of the *lorentzii* or quebracho of commerce, is as follows: Bark, 6 to 8 per cent; sapwood, 3 to 4 per cent; heart, 18 to 24 per cent. Only the heart of the tree is utilized, although the percentage of tannin in the other parts of the tree is as high as in chestnut and oak.

Most of the trees cut are between 25 and 40 feet in height and from 16 to 30 inches in diameter. Trees of 50 to 75 feet in height and over 32 inches in diameter are not uncommon. The tree is seldom completely straight and has few limbs, these branching off high from the ground. The bark is grayish in color and deeply rugose. The wood of the tree is of a yellowish color, but on exposure to sunlight turns to a dark red.

Quebracho is one of the heaviest and toughest woods known; hence its name, which signifies "ax breaker." The specific density of the wood is between 1.28 and 1.39, and a cubic foot of it will weigh between 79 and 84 pounds. The logs cut for the extract plants weigh between one-half ton and 3 tons, though logs weighing 5 or 6 tons are often cut. In the Argentine quebracho belt, where the trees are larger than in Paraguay, logs of 8 to 11 tons are found.

The tree is liable to the attacks of a large and formidably armed black insect. Trees are frequently found perforated with holes a half-inch in diameter by this powerful bug. The quebracho tree also suffers from fungus growths.

There are, strictly speaking, no quebracho forests. The trees are not found in solid stands, but are scattered through the general growth of the Chaco. There may be no trees in a given acre of forest, or there may be 20 or more. Detached trees in the open are common. Most of the trees are found on relatively high ground; that is, on areas which are not submerged for too long a period during the rainy season of the year. Trees which stand on marshy ground are liable to rot, and such trees, while apparently sound so far as external appearances show, are generally in a more or less advanced state of internal decay.

REGION OF QUEBRACHO GROWTH.

Though found occasionally over a much wider area, the favored habitat of the quebracho tree and the region where it is exploited on a commercial basis includes a belt extending up the west side of the Parana-Paraguay Rivers from the northern part of the Argentine

Province of Santa Fe through the Chaco region of both Republics to about Bahia Negra, or over about 10 degrees of latitude. The width of the quebracho zone varies greatly. Though trees may be found on the river bank, they seldom exist in considerable quantities at less than 5 to 10 kilometers back from the river. In the Paraguayan Chaco the quebrachales begin to grow very thin at 90 to 125 kilometers inland.

There is no basis for more than an approximate estimate of the remaining stock of quebracho. Figures run from 30,000,000 to 170,000,000 tons, but the lower figure is most probably more nearly correct. In 1917 the total production of the extract in Argentina and Paraguay was about 120,000 tons. Assuming an average tannin content of 20 per cent, this would represent the consumption of about 600,000 tons of logs. At that time the approximate total capacity of all the plants was about 50,000 tons. Granting the same proportion of tanning extract, this would require about 1,000,000 tons of logs. If we accept the highest figure as to the amount of timber left and if production should remain about stationary, the industry would be assured of over 250 years more of life. If, however, we grant the correctness of the minimum figure as to the amount of timber still standing and if production were maintained at the limit or even increased by the establishment of new factories, the quebrachales will be extinct in about 30 years. Indeed, one of the leading authorities on the industry puts its extreme duration at that figure. The tree is very slow in growing and the total annual growth can represent only a small proportion of the annual cut.

The six plants now operating in Paraguay are able to handle the available supply of timber in that country. The establishment of more factories would only increase the difficulty of obtaining logs. At least one plant has already been drawing on the Argentine Territory of Formosa for logs. It is highly probable that during the next few years one, and perhaps two, of the Paraguayan plants will be forced to close for lack of sufficient raw material.

Quebracho lands in Paraguay sell for between 2,000 and 12,000 gold pesos per square league (1,875 hectares or 4,633 acres), depending on their accessibility and the amount of timber on them. A league may contain from 4,000 to 20,000 tons of logs, but the average is probably between 6,000 and 8,000 tons. In the Argentine quebrachales both the average and maximum are considerably higher, the latter reaching 60,000 or even 80,000 tons in exceptional cases.

There are two distinct branches of the quebracho business. One is the exportation of logs for the manufacture of extract abroad, which is the original phase of the industry. The other, a later development, consists of the manufacture of extract in the native quebracho zone of South America and the exportation of the finished product. As early as 1888 the value of logs shipped to Europe amounted to 172,700 gold pesos, and by 1911 the exports had reached the value of 6,897,000 pesos. The Germans in particular formerly imported large quantities of logs, because they found it possible to produce the extract more efficiently and cheaply in Germany than it could be produced in the Argentine or Paraguayan plants, where costs of production are very high. The comparatively low cost of transportation before the war, especially in sailing vessels, made practicable what

would otherwise appear an unprofitable alternative to production on the ground. Even during 1917, 95,000 tons of quebracho logs, representing a total tannin content of some 20,000 tons, were shipped to the United States from Paraguay and Argentina.

LOGGING OPERATIONS IN QUEBRACHO INDUSTRY.

The most costly stage in the production of quebracho extract consists in the logging operations. Only a relatively small proportion of the laborers employed by a given establishment are engaged in the factory itself. The majority of them are in the forests, where they are at work making roads, felling trees, hauling them to the railway, or loading them onto cars. The work of taking out logs is generally let to contractors, who operate on a tonnage basis. The contractor provides his own peons and oxen.

A "picada," or road, is first cut through the section of forest that is to be exploited. The workmen then erect temporary huts in a near-by clearing. Provisions and, during the dry season, water must be sent to them every few days. At other times there is an excess of water, and the country is submerged, when logging operations are either suspended altogether or greatly hindered. In felling the trees a highly tempered ax is required. A certain American brand of ax is the favorite tool throughout the quebrachales.

After the tree is cut down, the bark and a thin layer of sapwood are taken off. The logs, slung between two wheels about 7 feet in diameter, are then drawn to the nearest point on the railway line. The care and feeding of oxen used in transporting logs is one of the problems of the business. The oxen can be used only a half day or a day and then are turned out to graze for an equal period. The logs are piled alongside a railway siding, perhaps several thousand in a place, and as needed are loaded onto steel flat cars and hauled to the factory. The exhaustion of each area of quebrachales requires the extension of the railway line into regions of untapped forest.

Though there are no steep grades to contend with, railway construction in the Chaco presents peculiar difficulties. Because of the periodic inundations the roadbed must be laid on a terreplein several feet above the annual flood level. As there is no rock or gravel available in the Chaco, the track is given to sliding after heavy rains and may continue to do so until the terreplein has been covered with vegetation, which helps to hold it firm. Ties are, however, easily accessible, as quebracho itself is used for that purpose. The ties are covered with earth as further security against slipping. Fuel also presents no problem, as the branches of the quebracho trees are utilized for stoking the locomotives.

The total mileage of the railways on the quebracho properties is about 155. These are of 76-centimeter gauge, except in the case of the International Products Co.'s line, which is of meter gauge.

Some of the Paraguayan extract companies are obtaining a large share of their log supply from timber workings that are within comparatively easy reach of the river but on other lands, usually on cattle estancias. In such cases the logs are hauled to the river bank by oxen and thence are carried to their destination by lighters.

MANUFACTURE OF QUEBRACHO EXTRACT.

The first operation in the actual process of manufacturing the extract consists in reducing the logs to chips. This is done by forcing the logs lengthwise against a swiftly revolving drum having a smaller diameter at the center than at the ends, so that it presents two surfaces meeting each other at an angle of about 120° . Each surface has a number of steel knives of an unusually high temper calculated to endure the strain to which they are subjected. These knives project about a third of an inch through apertures in the surfaces of the drum and chip off the wood transversely to the grain. A 20-foot log 1 foot in diameter can be reduced to chips in from four to seven minutes. Logs which have been cut for a long time are much more difficult to chip than those recently felled.

The chips are carried by endless chain conveyors to large closed copper containers, or extractors, where they are treated with boiling water or steam at high pressure. The resultant liquid contains the extract, either largely diluted or concentrated, according to the method used. The extract is then led by pipes into vacuum tanks, where it is condensed to the desired consistency and gradually clarified and cooled. In a viscous form it is drawn off into wooden boxes and when cool solidifies into a cake. Each cake is put into a jute bag and in this form the extract is shipped. Each bag weighs 50 kilos (about 110 pounds). The finished product is crystalline in composition and dark maroon in color.

OTHER USES OF QUEBRACHO.

There is a large demand for quebracho wood for purposes other than the manufacture of tanning extract. The principal demand is as material for ties on the Argentine railways. For use as ties quebracho has no superior, lasting 20 to 30 years with no apparent sign of deterioration. Its great durability is probably due to the density of the wood, which excludes moisture, and to the effect of the tannin, which acts as a preservative. The principal defects of quebracho ties are their lack of resilience and the cost of boring holes for the bolts which must be used instead of spikes for holding the rails in place. Quebracho timbers are also in demand as material for beams and piling. Though it takes a beautiful polish and has an attractive coloring, quebracho wood is very little used for cabinet-making because of the great difficulty of working it.

QUEBRACHO COMPANIES IN PARAGUAY.

There are six quebracho extract plants in Paraguay. They are locally known by the names of the ports where the plants are situated, as Galileo, Pinasco, Max, Casado, Sastre, and Guarani. Each of the establishments is a large independent community, with many problems of administration that have no direct relation to the quebracho itself. Grouped around the large factory building at the port is a considerable town and back in the forest to the rear are other scattered centers of population. These quebracho ports are much better ordered and administered than the villages in eastern Paraguay which are not controlled by industrial companies. They are lighted with electricity and are supplied with schools, competent doctors, and amusement places. The companies maintain their own

stores, public bakeries, and meat shops. Large herds of cattle are kept for supplying the population with meat. The authority of the Paraguayan Government in each port is represented by a police official, called the comisario, who has from 4 to 10 soldiers under his orders.

The labor force consists largely of Paraguayans from the east side of the river. Few Chaco Indians are employed. The peons of the Alto Paraguay region are hardy and good workers, but they must be carefully handled. They are generally well paid and treated with consideration. The supply of labor available for the quebracho establishments is limited and the labor situation as a whole is very uncertain.

The production of quebracho extract by the five oldest Paraguayan plants during the four years 1915 to 1918 was as follows:

| Quebracho plants. | 1915 | 1916 | 1917 | 1918 |
|-------------------|--------------|--------------|--------------|--------------|
| | Metric tons. | Metric tons. | Metric tons. | Metric tons. |
| Sastre..... | 5,200 | 4,800 | 7,700 | 7,500 |
| Casado..... | 7,340 | 6,257 | 6,977 | 4,897 |
| Guarani..... | 5,658 | 8,228 | 4,308 | 6,033 |
| Gallego..... | 2,347 | 1,074 | 2,671 | 940 |
| Max..... | 7,876 | ..... | 3,253 | 8,810 |
| Total..... | 28,421 | 15,359 | 24,903 | 23,180 |

There follows a separate account of each of the quebracho companies engaged in Paraguay.

THE INTERNATIONAL PRODUCTS CO.

The present American company acquired control of the properties of the New York & Paraguay Co. in 1917. The latter company had been organized in New York in 1910 to buy the holdings of the Compañía Rosarina de Campos y Bosques, which were located in the Chaco. The New York & Paraguay Co. limited its activities to lumbering and cattle raising. The extracting of tannin was not begun until the International Products Co. took over the properties and installed the present extract factory at Puerto Pinasco. The latter company, whose organization, is described in the chapter on "Meat Packing," is one of the enterprises controlled by the American International Corporation. It represents a capital stock of \$3,250,000 United States currency. In November, 1919, the International Products Co., with its subsidiary, the Central Products Co., which is engaged in the meat-packing business at San Antonio, was incorporated under Paraguayan law as the Compañía Internacional de Productos.

The extract plant of the International Products Co. is located at Puerto Pinasco, about two days' ride by steamer above Asuncion. It is the first quebracho establishment reached in going up the Alto Paraguay. The aggregate holdings of the company in the Chaco amount to considerably over 200 square leagues of land. These include the original lands of the New York & Paraguay Co. and later acquisitions, particularly a large block of land adjoining to the south.

The factory was constructed during 1918 and operations were begun in November of that year. During its initial period the plant has been under the immediate supervision of George D. Kerr, the quebracho expert and constructing engineer. The factory is the largest single unit in Paraguay and has a monthly capacity of 1,200 tons, which is to be doubled in 1920. It is equipped with American-made machinery. The company has over 70 kilometers (43 miles) of railway line, on which it operates 8 locomotives and 140 flat cars, besides some passenger and cattle cars.

The lands of the company have a population between 5,000 and 6,000. About 1,000 of these live at the port and the remainder are scattered along the railway and through the forest. About 10 Americans are employed in the administration and office force.

QUEBRACHALES Y ESTANCIAS PUERTO GALILEO.

This Argentine limited-liability company was founded in 1906. It represents a capital of 1,000,000 gold pesos. The Buenos Aires office is located at Calle 25 de Mayo 195. The company is largely an interest of the Mihanovich family.

The plant is located at Puerto Galileo, on the Paraguayan bank of the Pilcomayo, about 20 miles above its mouth. The company owns about 100 square leagues (725 square miles) of land. The surrounding country is very low and subject to inundation.

The factory has operated intermittently. Its capacity is 250 tons of extract per month. For the year ending March 31, 1918, the company realized a profit of 124,225 gold pesos.

QUEBRACHALES FUSIONADOS.

This Argentine company was formed by the combination of two companies which formerly operated independently. It is capitalized at 5,250,000 Argentine paper pesos. The president is Juan Oscamou and the vice president Luis Maffioretti. The Buenos Aires office is located at Calle Sarmiento 643.

The principal plant of the Quebrachales Fusionados is located at Puerto Tirol, in the Argentine Chaco. In Paraguay it now has only the comparatively small factory at Puerto Max, which is on the east side of the Paraguay River a short distance above Puerto Pinasco. It is the only quebracho establishment that is not situated on the Chaco side of the river. The company owns about 24 square leagues (175 square miles) of land in the neighborhood of the Puerto Max plant. The capacity of the factory is about 700 tons per month. The company formerly had a factory at Puerto Maria in the Chaco, where it possesses about 100 leagues of land. However, it was forced to abandon its well-equipped Puerto Maria establishment, because of lack of sufficient timber, and to transfer the machinery to the Argentine Chaco, where it was installed at Tirol.

In 1916 the profits of the company amounted to 2,963,936 Argentine paper pesos. Out of this sum a 69 per cent dividend was paid and the remainder deposited in the reserve fund. In 1917 the profits were 1,452,828 pesos, and in 1918 they amounted to 2,028,964 pesos. Most of this was the result of its operations in the Argentine zone.

COMPAÑIA DE TIERRAS CARLOS CASADO (LTDA.).

This is the pioneer of all the quebracho companies, and in fact the pioneer of all industrial enterprises of whatever kind in the Paraguayan Chaco. In 1887 Carlos Casado acquired 3,000 square leagues of land in the northern part of the Chaco, amounting to over 22,000 square miles, or about the combined area of New Hampshire, Massachusetts, and Connecticut. The Casado territories were also about equivalent in size to Belgium and the Netherlands. They were acquired for 100 gold pesos per league. Since then a large part of the lands have been sold, so that the present holdings of the company amount to 1,640 square leagues, still the largest single property in Paraguay.

The Casado interests were organized in 1909 as an Argentine limited liability company with a capital stock of 1,500,000 gold pesos. The Buenos Aires office is situated at Calle 25 de Mayo 158.

The company's quebracho establishment, the beginnings of which date back to 1889, is located at Puerto Casado, a few hours' ride above Puerto Max. The capacity of the plant is about 1,000 tons per month. The business has been very efficiently managed under the supervision of members of the Casado family and has paid good returns to its owners.

CAMPOS Y QUEBRACHALES PUERTO SASTRE.

This company was founded in 1905 and has a capital of 1,488,000 gold pesos. Like the Puerto Galileo company, the interests represented are largely those of the Mihanovich family. The company is organized in Argentina and the home office is at Calle 25 de Mayo 195, Buenos Aires.

Puerto Sastre, where the factory is located, is almost directly opposite the mouth of the Apa River, which forms the boundary between Brazil and Paraguay. The properties of the company include about 122 square leagues (880 square miles) of land. The plant has a capacity of about 1,000 tons per month. The profits of the company were 509,789 gold pesos in 1915, 427,172 pesos in 1916, and 238,079 pesos in 1917.

SOCIEDAD FORESTAL PUERTO GUARANI.

This Argentine company was founded in 1910, but was reorganized in 1914, after a period of unsuccessful operation. The capital stock amounts to 1,500,000 paper pesos. The president of the company is A. M. Gandara and the vice president is R. W. Roberts. The Buenos Aires office is located at Calle Bartolome Mitre 376.

The Puerto Guarani plant is the northernmost of the quebracho establishments. The company possesses in the vicinity about 43 square leagues (310 square miles) of land. The capacity of the plant is about 700 tons of extract a month.

The profits for the year ending June 30, 1917, amounted to 517,943 paper pesos.

THE QUEBRACHO TRADE.

The Paraguayan Government levies a duty of 8.50 gold pesos per ton on all extract exported from the country. This tax was formerly 3 pesos and was later raised to 10 pesos per ton. However, the factories suspended operation in December, 1917, as a protest against the high rate levied on their product and threatened to move their plants to Argentina if the duty were not reduced. The tax was accordingly lowered to the present rate. Exports are also required to pay 1 per cent ad valorem in addition to the specific duty.

The extract is generally shipped in lighters or steamers to Asuncion, where it is transferred to the larger boats for Buenos Aires. Thence it is reshipped as Argentine extract. The freight rate from Puerto Pinasco to Buenos Aires is 12 gold pesos per ton (about 57 cents per 100 pounds) and somewhat more for shipments from ports higher up the river.

PRICES AND PRICE CONTROL.

In 1915 the prices of extract in Buenos Aires fluctuated between 78 gold pesos per ton in January and 210 pesos in the latter part of the year. In 1916 the price rose to 245 pesos in May, but in October fell as low as 120 pesos, though it again rose to 140 pesos in December. In 1917 the price varied between 125 and 170 pesos. In 1918 it remained around 90 pesos for most of the year. During the first six months of 1919 the price rose from 90 to 145 pesos, and by the end of the year stood at 195 pesos.

In addition to the effect of the war-time demand for the extract, the most important factor in determining prices has been the combination entered into between "La Forestal" and the small producers for the purpose of keeping up prices. The powerful Forestal Land, Timber & Railways Co. (Ltd.), which is locally known as "La Forestal," has gained a position in the Argentine industry from which it is able to dominate the quebracho business, since it produces considerably over half the output of the Argentine quebrachales. The home office of this company is in London, and its Buenos Aires office is at Paseo Colon 185. Its American agents are the New York Quebracho Extract Co. The capital stock was recently raised to 7,000,000 pounds sterling. The company has been very cosmopolitan in its composition, and in January, 1918, its shares were divided as follows: English, 1,325,000; German, 856,000; French, 400,000; American, 386,000; Dutch, 86,000. It owns vast properties and operates five extract plants in the Argentine Province of Santa Fe and Territory of Chaco.

The first price agreement among extract companies was made in 1907, but was not renewed in 1909, although it had been successful in the purpose for which it was created. After that there was a downward movement in prices until, in 1913, some factories were closed. The next year the war gave a great impetus to the industry, and in 1915 there was an unheard-of rise in the price of extract. In 1916 a number of Argentine producers and five of the Paraguayan companies entered into an arrangement with La Forestal whereby the latter was constituted the selling agent of the members of the

combination. La Forestal guaranteed the independents a certain minimum price for the product, and in case the price rose over that mark it agreed to divide the excess in a certain ratio. It received a commission for acting as selling agent. The agreement was renewed in 1917, but in 1918 the independents refused to intrust the marketing of their product to La Forestal. In 1919 the agreement was renewed, though the International Products Co. and the Puerto Sastre Co. remained outside the combine.

EXPORTS OF QUEBRACHO EXTRACT AND LOGS.

Exports of quebracho extract from Paraguay from 1914 to December 1, 1919, were as follows: 1914, 12,710 tons; 1915, 18,308 tons; 1916, 21,136 tons; 1917, 29,899 tons; 1918, 19,096 tons; 1919 (first 11 months), 29,877 tons. Though credited to Argentina, a large part of the quebracho extract produced in Paraguay is reexported to the United States. Exports of quebracho logs during the same period amounted to the following figures: 1914, 8,417 tons; 1915, 2,323 tons; 1916, 1,006 tons; 1917, 1,645 tons; 1918, 522 tons; 1919 (first 11 months), 1,350 tons.

OTHER TANNING MATERIALS.

A detailed list of the Paraguayan trees whose bark contains tannin is found in "Tanning Materials of Latin America," Special Agents Series No. 165, published by the Bureau of Foreign and Domestic Commerce in 1918. The tanning material most commonly used in Paraguay is the bark of the curupay, which has a tannin content of over 28 per cent.

YERBA MATE.

The yerba tree, known to science as *Ilex Paraguayensis* and to the Guarani race as caá, is indigenous to most of eastern Paraguay, but especially flourishes in the part of the country east of longitude 57° 30' west of Greenwich. It is also native to the Brazilian States of Matto Grosso, Santa Catherina, Parana, and Rio Grande do Sul and to the Argentine Territory of Misiones. It has been transplanted to other regions where climatic and soil conditions are similar, not only in South America, but in the East Indies. In tradition and in the popular mind it has been associated with Paraguay, and this connection is not only reflected in its scientific name but in the name "Paraguay tea," which is often applied to the drink brewed from the leaves of the yerba.

The trees exploited are from 10 to 20 feet high, though the tree attains a height of 25 feet and even more. The yerbales, or yerba zones, do not consist exclusively of stands of yerba trees, but the trees are scattered throughout the forest. In some places, especially near the watercourses, they are found in greater abundance and may even constitute the predominant tree of the immediate locality. Where the yerbales have been worked for a long time the forest is often cleared of the thick undergrowth and the larger trees. This not only greatly facilitates the process of taking out the yerba, but aids the growth of the tree and increases the production of leaves.

However, the clearing of the forest is an expensive undertaking, and because of the rapid growth of vegetation in the tropical climate must be maintained to be permanently effective.

The leaf of the yerba tree is elliptical in shape. It is from 8 to 11 centimeters (3 to 4 inches) long and about half as wide. On one side it is glossy green in color, but darker than the leaf of the orange tree, with which it is easily confused at a distance. The foliage of the yerba is perennial.

CULTIVATION OF YERBA.

In order to replenish the loss of trees and to provide for the increasing demand for the product, there is a growing tendency to resort to the artificial cultivation of the plant. In fact, the future growth of the industry must depend on the increase of the artificial yerbales, as well as on the clearing of the natural yerbales. The principal problems in connection with yerba cultivation have been those of acclimatization and germination. Tests have shown that the yerba tree is capable of sustaining a more rigorous climate than was long believed, and it has been found to endure a temperature of 5° or 6° centigrade below zero without permanent damage to the plant. The problem of germination has been much more difficult. Until recently it was generally believed that the only method of germination was that described by the old Jesuit writers; that is, that it was necessary for the seeds to have passed through the digestive tract of birds before germination was possible. The utilization of such a method for commercial purposes was clearly impracticable, but this ancient theory has been exploded as a result of numerous experiments which have been made in Paraguay, Argentina, and Brazil.

By the process known as "stratification" the seeds are buried in layers of sand or sandy soil, or sometimes in soil mixed with sawdust. Some growers accelerate the process by first submitting the seeds to a bath of weak hydrochloric acid or potassium nitrate solution, but the majority deny the necessity of resorting to the use of chemicals, and contend that a succession of baths in warm water has the effect of hastening germination.

When the seeds have begun to germinate, they are transplanted to beds, where they are protected from the sun and wind, but carefully supplied with the requisite moisture. After five or six months the young plants are transplanted in rows with a space of 3 to 5 meters between them. The growth of the tree is henceforth rapid, and exploitation usually begins in the fourth year.

Though the practicability of the artificial cultivation of yerba has been amply demonstrated, there is still a wide divergence of opinion as to the best methods to be practiced, and the different growers are often prone either to maintain an air of mystery about their own favorite processes or to criticize those of others. Some of the most careful work being done at present in this connection is that of the Argentine experimental stations.

The largest cultivators of yerba in Paraguay are La Industrial Paraguaya and Domingo Barthe y Cía., who are also the most important producers of natural yerba. The largest plantations of the former are in the vicinity of Nueva Germania in the north, and

those of Barthe are located near Nacunday on the Alto Parana. The latter now has 1,400,000 trees producing and 1,000,000 immature plants. The plantations cover a total of 11,369 hectares, and it is anticipated that within a couple of years the production of these planted yerbales will reach a total of 2,800,000 kilos of yerba.

The production of cultivated and natural yerba during the last four years was as follows:

| Years. | Cultivated. | Natural. |
|-----------|-------------|-----------|
| | Kilos. | Kilos. |
| 1915..... | 455,000 | 6,594,500 |
| 1916..... | 280,000 | 7,922,065 |
| 1917..... | 3,081,000 | 6,037,750 |
| 1918..... | 3,345,000 | 8,587,500 |

GATHERING AND PREPARATION.

A national law sets the period for gathering yerba from January to August, inclusive. The trees are cut only once in four years. At the beginning of the harvest the "yerbateros" make a clearing in a section which has not been exploited during that time. Here they build temporary huts and from this center collect the yerba from the neighboring forest. The gathering is done with a strong machete, with which they cut off branches 4 to 4½ feet long, so that the trees are trimmed very closely. The workman then carries a bundle of these branches weighing 200 pounds or more to a place near by where he submits them to a preliminary toasting known as "overeo." This consists merely in passing the branches hastily over a blazing fire. He then strips the leaves from the branches and carries them to the clearing, where they are weighed.

They are then carried by carts to the "barbacuá" of the ranch for the final toasting. The usual barbacuá is a very primitive oven covered with a thatched roof. It consists of a large hole in the ground into which the firewood is put and from which an underground passage leads to another hole. From an aperture in the latter the heat for the toasting of the yerba leaves is permitted to escape. A framework is constructed about 10 or 12 feet above this aperture and on this framework the leaves are spread. Here they are left for one to two days while they are submitted to the heat of a slow fire. During this time they must be protected from the smoke of the oven, which damages the flavor of the yerba. In the Argentine Misiones some mechanical ovens are in use, but the Paraguayan producers adhere to the original barbacuá, whose use dates from the Jesuit régime.

The dried leaves are then packed tightly in bags and carried to the nearest navigable stream, of which there are many throughout the yerba regions of Paraguay. Chatas, or lighters, carry the bags thence either to such river ports as Puerto Embalse, where they are loaded onto the steamers of the Alto Parana for transportation to Posadas, Corrientes, or Buenos Aires, or, if on the western side of the watershed, generally carry them directly to Asuncion. At either of these cities there are mills which grind the leaves to the fineness necessary for their use in the making of mate.

MATE DRINKING.

The traditional method of taking mate is from a dried gourd about 3 inches in diameter. In fact, the custom of imbibing the drink from the gourd, or mate, as it is called in the Guarani language, has supplied the name by which the drink itself is known. Hot water is poured on the powdered yerba in the mate, and the resulting brew is sipped through a metal tube, or bombilla, which is inserted through the aperture in the gourd. Sometimes the yerba cup is made from a cow's horn, and considerable ingenuity is often displayed in the decoration of these wampas, as they are called, and of the mates. When hot water is not available, the natives prepare their mate with cold water, in which case the drink is known as tereré. When prepared like Chinese tea it is called mate cocido.

The drink has a somewhat bitter taste, and in the case of those not addicted to it from childhood a liking for it must be acquired. The Paraguayan considers his mate one of the few prime necessities of life. He begins the day with it and takes it at intervals several times during the day. At social gatherings the mate is always passed around from mouth to mouth, as an inevitable feature of Paraguayan hospitality.

The effects of yerba drinking are stimulative, without having any perceptible deleterious reaction on the system. It fortifies the body against cold, fatigue, and hunger, and its use is undoubtedly responsible for much of the remarkable endurance of which the Paraguayan peon of the country districts is capable. Stopping only long enough to take an occasional "mate," he can remain on horseback or at the most arduous work in the forest for many hours at a time without further rest or nourishment. It is a drink deserving of a much wider field than it now enjoys.

PRODUCTION OF YERBA.

The total production and by districts during the period 1914 to 1918, inclusive, was as follows:

| Years. | Concep- cion. | San Pedro. | Ihu. | Caazapá. | Encarna- cion. | Total. |
|-----------|------------------|------------|---------|----------|-------------------|------------|
| 1914..... | Kilos. | Kilos. | Kilos. | Kilos. | Kilos. | Kilos. |
| 1914..... | 1,290,000 | 3,623,250 | 273,000 | 10,000 | 2,666,000 | 7,862,250 |
| 1915..... | 891,000 | 3,188,000 | 596,000 | 200,000 | 2,160,000 | 7,035,000 |
| 1916..... | 809,000 | 3,485,000 | 721,000 | 10,000 | 3,166,065 | 8,182,065 |
| 1917..... | 655,000 | 2,919,820 | 382,940 | ..... | 5,161,000 | 9,118,760 |
| 1918..... | 1,335,000 | 3,712,250 | 368,000 | 100,000 | 6,417,500 | 11,932,750 |

In 1915, 7,500 kilos were taken out of the Guaira district. The yerbales of the San Pedro zone are largely the property of La Industrial Paraguaya, while those of Domingo Barthe y Cía. are situated in the Encarnacion district. The development of the latter zone, largely due to artificial cultures, is one of the remarkable features of the Paraguayan yerba industry during the last few years.

TRADE AND MARKETS.

The amount of the yerba production of Paraguay exported and that consumed within the country during the period 1914 to 1918 was as follows:

| Years. | Exportation. | | Consumption. |
|-----------|-------------------------|---------------------|---------------------|
| | Mborobiré, unground. | Molindo, ground. | |
| 1914..... | Kilos. 3,042,192 | Kilos. 289,463 | Kilos. 4,535,595 |
| 1915..... | 4,421,809 | 287,404 | 2,240,287 |
| 1916..... | 3,231,421 | 44,317 | 4,906,327 |
| 1917..... | 3,789,110 | 65,740 | 5,263,910 |
| 1918..... | 3,598,593 | 29,843 | 8,304,314 |

All of the unground yerba goes to Argentina, where it is ground for consumption. Much of the Paraguayan yerba sent to Buenos Aires is mixed with Brazilian yerba, usually in the proportion of one to five parts. As the superiority of Paraguayan yerba is generally recognized in the Argentine market, the resulting mixture is usually sold as the Paraguayan product. Since the surplus produced in Paraguay is inadequate to meet the Argentine demand, Paraguayan producers show little interest in cultivating new markets. In the event of a large demand for yerba from Europe or the United States, Paraguay would scarcely be in a position to compete with Brazil on account of the difference in freights.

The competitive factor in the Argentine market comes from the importation of Brazilian yerba and from the cultivated yerba of the Argentine Misiones. In the latter Territory, which combines much the same conditions of soil and climate as the Encarnacion zone in Paraguay, from which it is separated by the Alto Parana, the Argentine Ministry of Agriculture is pursuing an enterprising policy of stimulating the artificial cultivation of yerba. Private producers, like Pedro Nuñez, are also growing the plants on a large and scientific scale. In 1918 the Territory of Misiones produced 2,490,445 kilos of yerba. It is highly probable that, with the further development of the Misiones yerbales and the imposition of a high import duty on imported yerba, Paraguayan yerba may find itself in need of another foreign market for its surplus production. It has already been introduced into some European countries, although in small quantities, and shipments have been made to the new Republic of Jugoslavia.

The decline in imports of Paraguayan yerba into Argentina is illustrated by the following figures:

| | Kilos. | | Kilos. |
|-----------|-----------|-----------|-----------|
| 1900..... | 8,890,000 | 1910..... | 2,338,461 |
| 1901..... | 9,457,000 | 1911..... | 2,270,281 |
| 1902..... | 7,658,000 | 1912..... | 5,499,334 |
| 1903..... | 4,075,000 | 1913..... | 3,427,052 |
| 1904..... | 5,593,000 | 1914..... | 3,639,463 |
| 1905..... | 6,692,000 | 1915..... | 6,413,593 |
| 1906..... | 3,580,000 | 1916..... | 3,312,753 |
| 1907..... | 3,024,671 | 1917..... | 3,824,449 |
| 1908..... | 3,759,000 | 1918..... | 3,600,416 |
| 1909..... | 3,296,300 | | |



FIG. 9.—STREET IN ASUNCION. DEPARTMENT STORE AT LEFT, BANCO AGRICOLA IN CENTER.



FIG. 10.—NEW STYLE OF HOUSE IN ASUNCION.

Special Agents Series No. 199.



FIG. 11.—CENTRAL PLAZA IN VILLA RICA.



FIG. 12.—NATIVE VILLAGE AT SAN SALVADOR.

Imports of Brazilian yerba into Argentina during the period 1909 to 1918 were as follows:

| | Kilos. | | Kilos. |
|-----------|--------------|-----------|--------------|
| 1909----- | 43, 696, 782 | 1914----- | 49, 030, 870 |
| 1910----- | 46, 186, 423 | 1915----- | 51, 869, 235 |
| 1911----- | 48, 247, 784 | 1916----- | 54, 195, 484 |
| 1912----- | 47, 307, 965 | 1917----- | 51, 365, 853 |
| 1913----- | 48, 186, 417 | 1918----- | 54, 839, 450 |

CHIEF PRODUCERS.

The most important of the Paraguayan yerba companies is La Industrial Paraguaya. This company was founded in 1886 and has a capital of 5,000,000 gold pesos, of which 3,464,120 pesos has been paid in. It was for a time one of the properties of the famous Farquhar Syndicate, and is now held in large part by a group of English interests formerly connected with that combination. The home office is in London, but the managing office is in Asuncion. This company has 1,160 square leagues of land, or approximately 8,400 square miles. These lands consist not only of forest but of large areas of open "campó." The company classes 466 square leagues of its lands as "yerbales" and the remaining 694 as general forest and "campo."

The lands of La Industrial Paraguaya do not lie in a compact block, but are scattered from the northern border to below the mouth of the Rio Mondáy, which flows into the Alto Parana. Altogether they represent the largest single land holding in Paraguay outside of the Chaco and are only exceeded there by the properties of the Carlos Casado Co. For administrative purposes they are divided into three zones. The principal center of operations is at Itakyry, and the chief ports of shipment are Tacurupucu and Puerto Embalse on the Alto Parana, though much of their product is sent out by the river system of the Jejuy into the Alto Paraguay and to Asuncion. The company has mills for grinding yerba in Asuncion, Corrientes, and in Buenos Aires.

The next largest producer in Paraguay is the Domingo Barthe Co. (Cía. Barthe & Hijos, Campos y Yerbales), which holds 412 leagues (about 3,000 square miles) of land in the southern part of the country, facing on the Alto Parana. The central offices of this company, which does also a large lumbering business, are at Calle Sarmiento 456, Buenos Aires, but most of the work on its properties is directed from Posadas, the capital of the Argentine Territory of Misiones. The company is capitalized at 4,000,000 gold pesos.

The important Brazilian company, La Matte Larangeira, has some yerbales in northern Paraguay, although the most of its holdings are in the southern part of Matto Grosso, directly north of the Paraguayan border. It has offices at Asuncion and Concepcion. The home office is located at Calle Sarmiento 539, Buenos Aires. The Asuncion house of Boettner & Gautier does a large business in milling yerba.

FIBER PLANTS.

A number of valuable fiber plants grow wild and in great abundance in Paraguay. Though both the natives of the country east of

the river and the Indians of the Chaco utilize these plants in the making of twine and for other purposes, little has been done to develop the fiber industry on an industrial scale. There has been lacking the individual initiative and the capital necessary to organize such industries. There has been lacking also a thorough understanding of the technical processes involved in extracting the fiber from the plants, some of which are very refractory to treatment and demand special machinery for separating the fiber.

The most common of these textile plants are included in the following list:

Ramie.—This nettlelike plant, the *Boehmeria nivea* of science, which is also found in the West Indies and in the southern part of the United States, grows very prolifically in the forest regions of Paraguay. Four or five cuttings a year can be made from each plant.

Caraguatá.—This is one of the most characteristic plants of the Paraguayan landscape, growing in great profusion over most of the country. The caraguatá has a long, narrow leaf with sharp, strong spines on each edge that makes it very troublesome to handle. The fibrous filaments run the length of this leaf, which may be as much as 4 feet long. The texture of the fiber extracted from the plant is extremely tough, and it furnishes excellent material for the making of rope and twine. The caraguatá is the *Bromelia fastuosa* of botany and is closely related to the pineapple plant.

Ibirá.—This plant belongs to the same family as the caraguatá, but is smaller and the texture of its fiber is finer, though very resistant.

Samuhú.—It is this tree which produces the fiber known as "vegetable silk." The tree, which is kindred to the cotton tree, is of very peculiar appearance. It tapers very rapidly from its base and is covered with extremely hard spines, which project at right angles to the trunk. Its leaves are small and sparse. The fiber, which is short, is contained in pods 4 or 5 inches long and from 1½ to 2 inches in diameter. It is very soft to the touch and has a marked silky sheen. Locally its use is largely limited to the stuffing of pillows, but its possibilities are by no means limited to utilization for this purpose.

Coco palm.—This, the mbocayá of the Guaranis, is found in large quantities in certain districts of eastern Paraguay, forming real forests in some places. The different parts of the tree have a great diversity of uses. Palm oil is made from the nut, which also furnishes good material for fattening stock. The textile material of the palm is derived from the long leaves, from which the natives extract a strong fiber for making hats, hammocks, ropes, and cloth.

Guembepí.—This is a creeper which hangs from the trees of the forests. It is often 50 to 60 feet in length. The natives use the guembepí just as they find it, as a substitute for rope. However, rope of unusual strength and durability can be made from the filaments of its bark.

Jute.—The so-called American or Paraguayan jute can be grown with great ease. Planted in October or November, it matures in about seven months, and its growth is not hindered by droughts or excessive rains. About 12,000 plants can be grown to the hectare, and each hectare will produce about 4 tons of fiber. The Para-

guayan jute is capable of taking the place of Indian jute and its cultivation should offer excellent prospects. There is a great demand within the country itself, as well as in Argentina, for material for sacking yerba, tobacco, quebracho extract, maize, etc., and particularly in Argentina for the shipment of wheat and linseed. In 1918 imports of jute sacking and burlap into Paraguay amounted to 585,906 kilos, with an approximate value of 260,000 gold pesos.

In February, 1918, a company was organized in Paraguay under the name of La Textil Paraguaya for the exploitation of the jute industry. The capital was fixed at 100,000 gold pesos, of which over half has been subscribed. The company holds a concession from the Paraguayan Government for 25,000 hectares of public lands, on the condition that it bring in colonists and develop the land. It has already obtained possession of 2,000 hectares on the Tebicuary River, about 4 miles from the Itape station of the Central Paraguay Railway. Part of this is now planted to jute, for the treatment of which the company has installed some rather crude equipment. The organization represents some responsible local interests, but its management lacks the requisite technical capacity for handling the manufacturing end of the business.

MINERAL RESOURCES.

According to Miller and Singewald's *Mineral Deposits of South America*, "Paraguay seems to be the poorest of all South American countries in mineral resources, and possesses practically no mining industry." There has been lacking a mineralogical survey of Paraguay that would show the country's prospects for mineral development. The existence of ore deposits, particularly of iron and manganese, can not be denied, but reports of their extent and value are so conflicting as to furnish no accurate basis for calculations regarding the practicability of exploiting them on an industrial scale. The working of such ore beds as have been found has been retarded by the lack of the necessary capital and facilities for transportation. In the event of any development of mining the native woods of the country, some of which have a higher fuel value than coal, could be used for smelting purposes.

NATIONAL MINING LAW.

The national mining law, which was drawn up in 1914, places the title to all mines in the State, except in the case of quarries for the extraction of such construction materials as lime and building stone. However, concessions for mining may be granted to private parties on the payment of a tax of 20 centavos gold per hectare on the area covered by the terms of the concession, plus 5 per cent of the gross proceeds of the mining operations. The most active promoter of mining schemes in Paraguay is former President Schaeerer, who holds some concessions that include the best-known ore fields.

PRINCIPAL MINERAL DEPOSITS.

Indications of the presence of iron are widespread, ranging in proportion of iron from that in the red soil of the central part of the Republic through the highly ferruginous rock formations along the Alto Parana to the clearly workable ore deposits in the upper zone of the Misiones. In the latter region iron ores, generally in the form of hematite, are found about the towns of Caapucu and Quyquyo and farther north in the Cerro de Santo Tomás at Paraguari. The hills in the vicinity of San Miguel contain beds of magnetite. The ores throughout this area run from 30 to 50 per cent iron. In 1854, during the dictatorship of Carlos Antonio Lopez, a foundry was installed at Ibicuy for utilizing the ores of the surrounding region. During the war of 1866-1870, when Paraguay was cut off from the outside world by the blockade of the river, it was the cannon cast in this foundry that supplied the artillery of the Paraguayan armies. However, since the war the exploitation of the iron ore deposits of that district has not been resumed, although a concession is held which includes part of the old workings.

Manganese in the form of pyrolusite is present in different parts of the Cordillera region and in the northern part of the Republic. Assays of several specimens of ore have given 40 per cent of metal, and a few specimens have shown a higher proportion. It is very doubtful if the ore exists in Paraguay in quantities approaching the enormous deposits at Urucum in Matto Grosso, and the Paraguayan fields, moreover, lack the advantage possessed by the latter of close proximity to river transportation. A scientific examination of the manganese resources of the country is greatly needed.

Copper exists in one form or another in several parts of the country, but notably in the neighborhood of Encarnacion and of Caapucu. Other minerals which are believed to exist are lead, nickel, and zinc.

NONMETALLIC MINERALS.

Though no prospecting has been undertaken, it is entirely probable that, in view of the geological formation of the region and the known presence of oil deposits in the part of Bolivia which adjoins it on the west, petroleum exists in the Paraguayan Chaco.

Building and decorative materials in great abundance and variety are among the mineral resources of Paraguay. These include marble and porphyry of good quality and coloring, agate and serpentine stone, slate and materials for tiles, and granites and limestone. Quarries of good building stone are worked close to Asuncion and several limekilns situated along the Paraguay River utilize the limestone deposits of the northern part of the Republic. Among these may be mentioned the establishments located at Itapucumí and Itapytapunta.

Among materials for ceramic industries are large beds of kaolin and of other forms of earth suitable for making pottery. There are also deposits of talc, graphite, and lithographic stone. A company known as "Las Canteras de San Estanislao" was formed in 1917 to exploit some of these deposits.

MANUFACTURES.

RESTRICTED DEVELOPMENT.

Paraguay has little importance as a manufacturing nation, except for such primary extractive industries as are represented by the quebracho plants, the "frigorificos" or meat-packing establishments, and the sugar refineries. These three industries are considered elsewhere under their respective headings. Other less important branches of manufacturing are furniture, shoes, harness and other leather goods, brick and tile, matches, cigars and cigarettes, alcoholic and soft drinks, vegetable oils, and soap. The making of the native ñanduti lace, which is carried on by women in their homes, has not been industrialized and can scarcely be counted among the standard manufacturing industries.

FACTORS AFFECTING MANUFACTURING INDUSTRIES.

Among the factors affecting the success of manufacturing industries in Paraguay that of labor offers serious difficulties in such enterprises as demand a high degree of skill in their operatives. There is no ready supply of experienced factory workers, and any company which establishes a manufacturing business should expect to train a force of workmen in the very essentials of the industry. Other aspects of the labor situation in Paraguay are treated under separate headings.

Manufactories in Paraguay depend upon wood for their supply of fuel. Though by no means a cheap fuel, in spite of its abundance in the country, its cost is less than that of coal or oil.

POSSIBLE HYDROELECTRIC POWER.

As a reserve source of power the rivers of Paraguay offer vast possibilities, although most of the waterfalls are in what is now virtually a wilderness. Within a narrow zone along the Alto Parana, between the Nacunday and the Sete Quedas, or Guayra Falls, of the main river itself, there is a store of hydroelectric power such as is found in very few regions in the world. This includes the falls of the Nacunday, the Monday, and the Acaray on the Paraguayan side, of the Iguazu on the Argentina-Brazilian side, and the stupendous series of the Guayra cataracts. The falls of the Nacunday, which can be seen from the Alto Parana, are on the lands of the Domingo Barthe Co. Those of the Monday and the Acaray are on the properties of the Industrial Paraguaya. At Puerto Embalse, several miles above the place where the Acaray drops to the level of the Parana, it runs parallel to the larger stream at a distance of not more than 250 yards, but on a level about 200 feet higher than that of the Parana. It would be comparatively easy at this point to divert the waters of the Acaray directly into the Parana, developing, according

to an American engineer who has studied the site, about 40,000 horsepower.

LINES OF MANUFACTURE.

A brief summary of such of the above-enumerated industries as are not treated elsewhere is given below.

FURNITURE.

The making of furniture has assumed considerable importance in Paraguay and the local demand is now almost entirely supplied by the domestic industry. Not only are large quantities of wicker chairs and tables made, but from the excellent hardwoods of the country there is produced furniture of fairly attractive design and good finish. However, local manufacturers work on a small scale and possess few modern facilities, with the result that the cost of the higher grades of furniture is as great as that of imported furniture. Yet the home industry has the advantage of a 62 per cent import duty, very high freights, relatively lower wage scales, greater proximity to lumber supply, and recently a favorable exchange situation to protect it against foreign competition. Importations of furniture in 1918, exclusive of metal beds and wicker furniture, amounted to a total of 19,341 kilos, with a customs valuation of only 4,764 gold pesos. Nearly all of this was imported from Argentina and Uruguay, and consisted mainly of transit shipments of American and European furniture.

The principal concerns manufacturing furniture in Paraguay are Villalba & Subirachs, Asuncion; A. Altamira, Asuncion; Marcus Goldberg, Asuncion; and Antonio Paciello, Concepcion.

SHOES AND MANUFACTURES OF LEATHER.

Paraguay is well supplied with the raw materials essential for the production of leather manufactures of all kinds, since both hides and tanning materials are produced in large quantities within the country. There is also a rapidly increasing demand for shoes, and there has always been a good market for saddlery and similar classes of leather goods. Some of the fashions in local saddlery are quite different from those in the United States and Europe. One of the drawbacks of the domestic industry is the defective methods employed in tanning. Native tanners, who are forced to turn over their capital often, generally leave hides in the dip for only about three months, instead of allowing them to remain for double that time or longer.

The most important manufacturers of leather products of whatever kind are the following:

La Industrial Meilecke, Asuncion, makes shoes, saddlery, and traveling bags. This company has a paid-up capital of 250,000 gold pesos.

Celso Pusineri y Cía., Asuncion; shoes.

Benjamin Colunga, Concepcion; shoes and saddlery.

La Talabarteria Paraguaya, Asuncion; saddlery.

La Talabarteria Nacional, Asuncion; saddlery.

The firms of Meilecke and Pusineri, together with local shoemakers, turn out about 10,000 pairs of boots and shoes per month, repre-

senting an aggregate value of probably 40,000 gold pesos. Imports of leather boots and shoes of all grades for the three years 1916 to 1918, respectively, were 6,081, 8,182, and 13,098 pairs, over half of which were of American manufacture.

The shoe and leather business in Paraguay is covered in detail in Special Agents Series No. 177, published by the Bureau of Foreign and Domestic Commerce, entitled "Boots and Shoes, Leather, and Supplies in Argentina, Uruguay, and Paraguay."²

BRICK AND TILE.

The brick and tile used in building in Paraguay are baked in kilns located on the banks of the streams throughout the country. The bricks, which are made by hand, have the dimensions of approximately 6 by 10 by 1½ inches. The common red tiles are much used for roofing.

MATCHES.

Russo, Machain y Cía. operate a match factory at Asuncion, where they make about 30,000 boxes of wax matches per day. These retail at 1 Paraguayan peso per box of 50. Argentine matches are also widely sold in Paraguay.

ALCOHOLIC AND SOFT DRINKS.

The manufacture of beverages for local consumption is of considerable importance. The caña, or brandy, industry has already been described under the heading "Sugar."

There are two breweries in Asuncion, which produce a good quality of beer, besides ice and extract of malt. These are the Cerveceria Nacional, with a paid-up capital of 700,000 gold pesos, and the Cerveceria Americana, with a capital of 200,000 pesos. The production and consumption of beer by liters during the years 1915 to 1918 reached the following totals:

| | 1915 | 1916 | 1917 | 1918 |
|-----------------|----------------------|----------------------|----------------------|----------------------|
| Production..... | Liters. 1,198,800 | Liters. 1,680,000 | Liters. 1,298,000 | Liters. 2,246,450 |
| Imports..... | 5,191 | 21 | 568 | 1,132 |

Among other drinks bottled in Paraguay are anis, soda water, and "amargo," an aperitive prepared from the bitter orange. The principal manufacturer of this class of drinks is the concern known as "La Industrial."

No wine is produced in Paraguay, as grapes will not mature properly in the climatic conditions peculiar to the country. Most of the wine consumed is imported from the Argentine Province of Mendoza. "Common" wines in casks pay an import duty of 47 per cent, while all bottled wines and the finer European wines, when shipped in casks, pay a duty of 62 per cent. All other alcoholic liquors pay duties of

² For sale by the Superintendent of Documents, Government Printing Office. Price, 25 cents.

either 79 or 89 per cent. The National Bureau of Statistics gives the "real" value of imports of beverages during 1918 at 390,413 gold pesos. Among the imports were 2,005,849 liters of wine, 1,880,328 liters of which came from Argentina, 10,276 bottles of whisky, and 21,292 bottles of champagne. Mineral waters and soft drinks to the amount of 43,740 liters, valued at 7,472 pesos, were imported.

VEGETABLE OILS AND SOAP.

The principal vegetable oils produced in Paraguay are those derived from the coco, or mbocaya, palm, from the peanut, and from the castor bean. The coco-palm oil is extracted from the nut borne by that tree, which is very plentiful over large areas of the country. The percentage of oil contained in the nut is between 48 and 60. The husking and crushing of these nuts has offered a serious obstacle to the expansion of the industry. The machinery used has proven unsatisfactory, and those interested in the business are in search of a machine that will give more satisfactory results.

The production of peanut oil has been considered in another place. The "tártago blanco," or wild castor-bean plant, is found all over the country east of the river, and the "colorado," or cultivated variety, has been grown with great success. However, in spite of the strong demand for oil, little has been done in Paraguay to develop the industry on a commercial scale.

The principal firm engaged in the production of vegetable oils is the house of Boettner & Gautier.

Coco-palm oil furnishes excellent material for soap making, and several concerns are engaged in utilizing it for that purpose. Though potash has to be imported, fats are supplied in abundance by the frigorificos. For the manufacture of toilet soaps the essence of petit-grain, which is produced in the country, could be used as a perfume. This phase of the industry has not yet been undertaken.

The principal soap manufacturers in Paraguay are included in the following list: Angulo y Cía., Asuncion; A. Delpino y Cía., Asuncion; Alberto Grillon y Hijos, Asuncion; Crosa y Gagliardi, Asuncion; Caballero y Cía., Asuncion; Vaccaro y Cía., Luque.

Exports of coco-palm oil for the years 1914 to 1918 were as follows: 1914, 130 kilos; 1915, 15,519 kilos; 1916, 12,863 kilos; 1917, 133,793 kilos; 1918, 20,257 kilos. During the same period the exports of palm nuts fell from 136,892 kilos to nothing. In 1918 imports of vegetable oils amounted to 66,293 kilos, representing a "real" value of 29,815 gold pesos. In the same year imports of soaps reached the figure of 200,025 kilos, with a total value of 80,913 pesos. Exports of soaps in 1918 amounted to only 183 kilos.

FLOUR.

Nearly all the flour-milling business in Paraguay is in the hands of the concern known as "El Molino Nacional." This company has an outstanding capital stock of 500,000 gold pesos. It is controlled by some of the most powerful financial interests in the country. It also possesses large areas of land, stocked with cattle, and does a general exporting business.

TRANSPORTATION AND COMMUNICATION.

ROADS.

Good roads constitute one of the most urgent needs of Paraguay. In their present state the roads of the country are a serious barrier to the further development of its industries, but particularly of agriculture. There are roads connecting most of the towns of the Republic, but the facilities which they furnish for travel and the transportation of goods could scarcely be worse. Thus, from the capital one can go north through a thinly populated region to the Matto Grosso border; or east by the towns of the cordillera and the isolated village of Ihu, through the forests of the yerba zone, to the Alto Parana at Tacurupucu; or south by Paraguari and the length of the Misiones country to the Parana at Ayolas. These are only three of the main routes that can be followed throughout the country, and represent part of the great system of trunk roads which the first Lopez planned to extend to all parts of the Republic.

CONDITION OF ROADS.

Nearly all these roads offer the same difficulties. For example, in the course of a day's ride of a dozen leagues the road may lose itself in bogs, where the animals sink to their bellies; plunge into long stretches of deep sand, through which oxen can scarcely drag the carts; cross two or three bridgeless rivers, where horses must swim; splash through a long forest "picada," where the road seldom dries and where one track has been worn 3 feet deeper than the other; and pass across a moor, where the road disappears in a thousand tracks among the scrub. Some of the best roads have been constructed by private enterprises, and there are better roads on the lands of the Industrial Paraguaya in the remote eastern part of the country and in the German colony of Hohenau than those which lead into Asuncion.

The National Government has had no active and well-defined roads policy. The national road law of 1902, which requires that every man between the ages of 18 and 50 shall work eight days a year on the public highways, or pay in lieu thereof the paltry sum of 2 paper pesos per day, has not been enforced to even the extent of its limited possibilities.

The local authorities—*jefes politicos* and the municipal councils—have proven unequal to the task imposed on them by the central Government of caring for the roads. They have had to contend with apathy and lack of funds, two ubiquitous conditions in rural Paraguay, as well as with their own ignorance of the methods of good road construction. They generally understand neither the demands of the proper routing of roads, nor questions of materials, drainage, or grading. Moreover, half of the municipalities of the

Republic in 1918 lacked the properly constituted authorities, because there were not enough citizens in them who could satisfy the rather elementary qualifications demanded of councilmen. The National Department of Fomento, which took up the work of road improvement, was abolished before it had accomplished much.

PLANS FOR IMPROVEMENT.

The Banco Agricola, which is intrusted with the general supervision of road construction and repairing, is doing what it can within the range of its resources. The bank is vitally interested in the betterment of the roads as a necessary condition to the success of its entire program of stimulating the agricultural development of the country, but it is physically and financially unable to carry out a widespread scheme of road building and improvement.

The problem demands the undivided attention of a branch of the National Government which should be created for this specific purpose and endowed with sufficient funds and powers to enable it to carry through a thorough plan of highway and bridge construction. Opinion has been aroused in influential circles to the great need of the country in this respect, and there is an active movement in the Congress to establish a National Department of Roads and Bridges.

THE CENTRAL PARAGUAY RAILWAY.

The Ferrocarril Central del Paraguay is the only railway line in Paraguay that is of more than local importance, the remainder of the railway mileage of the country consisting of short narrow-gauge lines which serve primarily or entirely as auxiliaries to some particular industrial establishment. It is, moreover, not only the oldest line in Paraguay but one of the oldest in South America. It was begun in 1854, during the time of the first Lopez, and in 1861 was opened to service as far as Paraguari, 72 kilometers (45 miles) out from Asuncion. The line was utterly disorganized by the war with the Triple Alliance between 1866 and 1870.

CONSTRUCTION AND CAPITALIZATION.

Between 1884 and 1889 the line was extended to Villa Rica, 80 kilometers farther, by Luis Patri, acting under contract with the Paraguayan Government. In 1889 a company was formed in London which took over half the properties of the line, the Government remaining in possession of the rest. This company agreed to continue construction to the Alto Parana and by 1891 had extended the line to within a few kilometers of the Pirapo River, about 250 kilometers (155 miles) from Asuncion.

Differences had meanwhile arisen between the Government and the company, which was not in a state of complete solvency. The Government agreed to give up its share in the line on condition that the railway should be completed to Encarnacion, that the rolling stock should be entirely renewed, and the gauge changed to that of the lines in the northeastern part of Argentina. Nothing was done for many years toward carrying out this agreement, but in 1909 the completely reorganized Paraguay Central Railway Co. resumed the work of construction, and in 1911 the line was opened to

traffic as far as the Alto Parana at Encarnacion. In 1913 the gauge was changed to permit of direct connection with the Argentine Northeastern Railway, recently extended to Posadas opposite Encarnacion, and through service was opened between Asuncion and Buenos Aires. During 1913-14 there was also constructed the so-called Iguazu branch, which, leaving the main line at Borja, was built eastward 55 kilometers (34 miles) into the forest. As a result of the reckless management of Manuel Rodriguez during these years of rapid expansion, the line was forced into a receivership in October, 1914. During 1918 the administration of the company was again placed in the hands of the board of directors and the receivership declared at an end.

Before the recent reorganization was carried out the capital of £2,962,930 (\$14,419,099) was divided as follows: Six per cent prior lien debenture stock, £600,000; 6 per cent three-year notes, £500,000; 5 per cent debenture stock, £1,300,000; ordinary shares of £10 each, £562,930.

PRESENT ORGANIZATION.

The main provisions of the plan of reorganization are as follows:

(a) The payment in cash of the two years' arrears of interest on the prior lien debenture stock, and power given to increase the amount of such stock, as required, from £600,000 to £750,000.

(b) The waiving of all arrears of interest on the £500,000 of 6 per cent notes and the issue to the noteholders in satisfaction of their capital: £35,000 5 per cent war loan; £250,000 "A" debenture stock to be created; £300,000 "B" income debenture stock to be created.

(c) The compromise of claims of small unsecured creditors in cash, and the settlement of the larger unsecured creditors' claims by the allotment of "C" income debenture stock to be created.

(d) The capital of the existing 5 per cent debenture stock (to be in future called "D" income debenture stock) to be reduced by 20 per cent, from £1,300,000 to £1,040,000, but in the event of repayment to be payable at a premium of 25 per cent; the interest on the reduced capital to be increased from 5 per cent to $6\frac{1}{4}$ per cent.

The board of directors, as reconstituted under the new scheme, represents in its membership the different classes of debenture holders. One director is nominated by the Argentine Government. The board, as now organized, consists of the following members: B. H. Binder (chairman), Victor V. Branford, Sir Louis Coward, Alex L. Secretan, and E. Schickendantz.

The central offices of the company are at 80 Bishopsgate, London, E. C. 2. The general manager, whose headquarters are in Asuncion, is E. Thomas. The interests which control the Central Paraguay Railway belong to the group of capitalists who control the Argentine Northeastern and Entre Rios Railways, the yerba company, La Industrial Paraguaya, and the Paraguay Land & Cattle Co. All of these were elements in the gigantic combination of enterprises known as the Farquhar Syndicate. The Asuncion Tramway, Light & Power Co. (Ltd.) was until recently a subsidiary of the railway company, but this concern, which represented an investment on the part of the Central Paraguay Railway to the amount of £350,244 (\$1,704,462),

has been sold to the Compañía Italo-Argentina de Electricidad of Buenos Aires.

RECEIPTS AND EXPENDITURES.

The balance sheet for the year ended June 20, 1918, was as follows:⁸

| | | |
|---|----------|-----------|
| Gross receipts | | \$760,951 |
| Working expenses | | 421,371 |
| Net receipts | | 339,580 |
| Interest on Paraguayan bonds | \$38,066 | |
| Balance of general interest | 17,898 | |
| Transfer fees, etc. | 83 | |
| Profit on exchange | 36,513 | |
| | | 92,560 |
| Gross receipts | | 432,140 |
| Interest for year ended June 30, 1918, on 6 per cent prior lien debenture stock | 175,194 | |
| Interest for year ended June 30, 1918, on 6 per cent 3-year notes (accrued but not paid) | 145,995 | |
| | | 321,189 |
| Credit balance for the year | | 110,951 |

The increase in gross receipts over the preceding fiscal year was \$89,758, or 13.4 per cent, and the increase in working expenses \$1,046, or 0.2 per cent; the increase in net operating receipts was \$90,804, or 36.5 per cent. The item "Interest on Paraguay Government bonds" refers to the company's holdings of 6 per cent bonds, amounting to 27,000 paper pesos and 584,250 gold pesos, equivalent on June 30, 1918, to \$565,105. In their report for the year 1917-18 the board of directors declared: "The receipts for the year constitute a record; the net earnings are also the highest in the history of the company. The revenue, however, is still far from giving an adequate return on the capital invested in the company's undertaking."

The receipts and expenditures classified by items were as follows for fiscal years ended June 30, 1917 and 1918:

RECEIPTS.

| Items. | 1917 | 1918 | Difference. | |
|---------------------|-----------|-----------|-------------|-----------|
| | | | Amount. | Per cent. |
| Passengers | \$201,716 | \$212,394 | \$10,678 | 5.3 |
| Special trains | 4,394 | 5,874 | 1,480 | 33.7 |
| Parcels | 30,868 | 33,827 | 2,959 | 9.6 |
| Excess baggage | 492 | 399 | 93 | 18.8 |
| Telegrams | 8,059 | 8,609 | 550 | 6.8 |
| Freight | 378,492 | 437,328 | 58,836 | 15.5 |
| Warehouse rent | 1,986 | 3,514 | 1,528 | 77.0 |
| Rents | 2,370 | 2,535 | 165 | 7.0 |
| Sundry receipts | 35,967 | 54,748 | 18,781 | 52.2 |
| Government accounts | 6,847 | 1,723 | 5,124 | 74.8 |
| Total | 671,192 | 760,951 | 89,758 | 13.4 |

* Represents amounts uncollected for the year.

All amounts of money in this and succeeding statements relating to the Central Paraguay Railway have been converted from pounds sterling to the United States currency at the rate of \$4.8665 per pound.

EXPENDITURES.

| Items. | 1917 | 1918 | Difference. | |
|-------------------------------|-----------|-----------|-------------|-----------|
| | | | Amount. | Per cent. |
| Permanent ways and works..... | \$161,981 | \$140,306 | \$21,675 | 13.4 |
| Locomotive maintenance..... | 19,549 | 26,294 | 6,655 | 34.5 |
| Coach maintenance..... | 8,599 | 8,716 | 117 | 1.4 |
| Freight-car maintenance..... | 12,702 | 15,821 | 3,119 | 24.6 |
| Locomotive running..... | 75,110 | 75,854 | 745 | 1.0 |
| Vehicle running..... | 2,365 | 2,978 | 613 | 25.9 |
| Encarnacion ferry slip..... | 2,443 | 3,845 | 1,402 | 57.4 |
| General charges..... | 54,451 | 53,600 | 851 | 1.6 |
| Miscellaneous..... | 8,254 | 14,142 | 5,888 | 71.3 |
| Traffic expenses..... | 76,964 | 79,815 | 2,851 | 3.7 |
| Total..... | 422,418 | 421,371 | 1,047 | 0.2 |

The relation between receipts and expenditures during the period 1905 to 1919 is illustrated by the following table:

| Years ended June 30. | Traffic receipts. | Working expenses. | Profit. | Working per cent. |
|-------------------------|-------------------|-------------------|-----------|-------------------|
| 1906 ^a | \$268,670 | \$158,838 | \$109,832 | 59.17 |
| 1907 ^a | 347,726 | 228,000 | 119,726 | 65.57 |
| 1907 ^b | 59,498 | 48,125 | 11,373 | ----- |
| 1908..... | 419,531 | 246,376 | 173,155 | 58.73 |
| 1909..... | 376,891 | 219,134 | 157,757 | 58.14 |
| 1910..... | 472,664 | 237,432 | 235,232 | 50.23 |
| 1911..... | 584,092 | 338,852 | 250,240 | 57.16 |
| 1912..... | 544,965 | 328,362 | 216,603 | 60.25 |
| 1913..... | 712,996 | 392,113 | 320,883 | 55.00 |
| 1914..... | 760,342 | 438,345 | 321,997 | 57.65 |
| 1915..... | 490,417 | 297,280 | 193,137 | 60.82 |
| 1916..... | 612,804 | 338,820 | 273,984 | 55.29 |
| 1917..... | 671,197 | 422,417 | 248,780 | 62.38 |
| 1918..... | 780,950 | 421,371 | 339,579 | 55.58 |
| 1919..... | 1,110,107 | 604,736 | 505,371 | 53.85 |

^a Fiscal years ended Apr. 30.

^b Two months, May and June, only.

The line is greatly overcapitalized and can not be made to pay an appreciable dividend on its present capitalization. As things are, its percentage of net income is the smallest of any of the River Plate lines.

The length of the main line between Asuncion and Encarnacion is 230 miles (370 kilometers), and that of the Borja-Iguazu branch is 34 miles (55 kilometers). The gauge is 4 feet 8½ inches. The rolling stock consists of 23 locomotives, 46 passenger cars, and 460 freight cars. The shops of the line are located at Sapucay, 56 miles (91 kilometers) from Asuncion.

PASSENGER SERVICE.

The company runs several local trains daily to points near Asuncion, one as far as Paraguari. Besides the "International," there is one train a week between Asuncion and Encarnacion, which makes the 230 miles in 15 hours. During the five months, May to September, which cover the tourist season in Paraguay, the company operates two trains a week between Asuncion and Buenos Aires. During the remainder of the year this is reduced to one through train.

The schedule time for the "International" train is about two days and four hours. Leaving Asuncion at 7 a. m., the train reaches Encarnacion at 8 p. m. At this point it is ferried across to Posadas on the Argentine side, where it makes connection with the Argentine Northeastern Railway for Concordia. From Concordia it follows the line of the Entre Rios Railway to Ibicuy on the lower Parana, where it is ferried over to Zarate. From this point the train continues over the tracks of the Central of Buenos Aires, arriving in the Lacroze station at 11.10 a. m. on the third day out from Asuncion.

The first-class fare between Buenos Aires and Asuncion is 71.15 Argentine paper pesos, or about \$30.15. The second-class fare is 48.45 pesos. Round-trip tickets cost, respectively, 106.75 and 72.60 pesos. The train carries a sleeper, the berth costing 14 pesos (\$6) for the entire trip. A dining car is also carried, the meals being served on the table d'hote plan. The baggage allowance for each ticket is 40 kilos. Excess over that amount is paid for as follows: For the first 10 kilos at the rate of 79 centavos per 5 kilos (about 3 cents per pound), and at the rate of 67 centavos per 5 kilos (about 2½ cents per pound) for all excess over 10 kilos.

Passenger traffic on the Central Paraguay Railway during the two years ending June 30, 1917 and 1918, amounted to the following totals:

| Passenger traffic. | 1917 | | 1918 | |
|--------------------|---------|-----------|---------|-----------|
| | Number. | Receipts. | Number. | Receipts. |
| Ordinary: | | | | |
| First class..... | 117,524 | \$73,650 | 103,880 | \$89,013 |
| Second class..... | 239,521 | 96,843 | 167,379 | 99,437 |
| Excursion: | | | | |
| First class..... | 12,024 | 6,463 | 9,238 | 4,984 |
| Second class..... | 17,154 | 5,553 | 11,026 | 3,285 |
| International: | | | | |
| First class..... | 1,869 | 14,784 | 1,437 | 11,860 |
| Second class..... | 1,255 | 4,424 | 990 | 3,896 |
| Total..... | 389,347 | 201,717 | 293,950 | 212,395 |

The reduced number of passengers for 1918 and the increased receipts from that source were due to the high exchange rate on gold prevailing during most of the year.

Comparisons of the passenger traffic from 1906 to 1918 are given in the following table:

| Years ended June 30. | Number. | Receipts. | Years ended June 30. | Number. | Receipts. |
|-------------------------|-----------|-----------|----------------------|---------|-----------|
| 1906 ^a | 975,477 | \$114,504 | 1913..... | 532,807 | \$291,679 |
| 1907 ^b | 1,002,690 | 148,691 | 1914..... | 623,368 | 302,487 |
| 1908..... | 962,250 | 180,245 | 1915..... | 564,941 | 174,629 |
| 1909..... | 603,231 | 145,640 | 1916..... | 554,527 | 177,121 |
| 1910..... | 518,709 | 180,548 | 1917..... | 389,347 | 201,717 |
| 1911..... | 470,688 | 207,240 | 1918..... | 293,950 | 212,395 |
| 1912..... | 394,660 | 180,241 | | | |

^a Fiscal year ended Apr. 30.

^b Covers 14 months, May 1, 1906, to June 30, 1907.

The total number of passengers carried during the year ended June 30, 1919, was 418,635, of whom 5,600 were carried in international traffic.

FREIGHT SERVICE.

As in the case of the passenger service, the freight traffic of the Central Paraguay is divided into local and international business. In the field of local traffic it carries the products of some of the most important industrial districts of the country, its only competition for this business coming from the roads which parallel its line. In its international traffic, which consists largely of long hauls between Paraguayan points and Buenos Aires, it is forced to meet the competition of the river. Though its scale of rates is generally lower than that in force on the river steamers, its through freight service is hampered by very serious inconveniences.

The company has a working arrangement with the Argentine Northeastern and Entre Ríos lines, whereby the passage of through freight is facilitated and a scale of through rates made possible, but this service has never been put in smooth working order. Though the company has been able to eliminate the vexatious and unjust "slingage" charges of 3 gold pesos per ton formerly levied by the Paraguayan Government at Encarnacion, the transfer of freight at this point to the Argentine side is still attended by troublesome consular and customs regulations. The management of the company hopes to remove this handicap to its international traffic by an agreement with the Argentine Government whereby cars containing goods for Buenos Aires may be sent through sealed to their destination. By such an arrangement goods would be unloaded at Lacroze station into bonded warehouses or into the warehouses at the port through transshipment at the Caseros junction of the Pacific and the Central Railways of Buenos Aires. Customs formalities would then be handled at the termination of the journey. The necessity of transferring freight at San Martin station to the tracks of the Central Argentine or at Caseros to those of the Pacific is a serious burden in itself, not only because of the delays involved but because of the cost, which amounts to about 20 per cent of the total freight charges from the point of shipment in Paraguay.

It is largely the fact that this international traffic is forced to utilize the lines of so many different companies, with the consequent necessity of switchings and transfers, which accounts for the slow time made by through trains between Paraguay and the River Plate. Trainmen are also in the habit of sidetracking for days cars that contain urgent or perishable consignments, and the result is that cars which should reach Buenos Aires in a week or 10 days too often do not arrive in less than three weeks or even a month, as against 4 to 10 days by river. This may occur not only with shipments of lumber or tobacco, but with cars of oranges or live stock.

The management of the company is trying to improve its through freight service, but has to contend with its own lack of resources, with trainmen who are too often undependable, and with the circumstances that this traffic crosses an international frontier and makes use of at least four different railway lines. The Central Paraguay also lacks adequate rolling stock, and its roadbed is not fitted for the rapid movement of freight over its line. Furthermore, too much of its business is one-way traffic, necessitating the return of large numbers of empty cars from Buenos Aires. An agreement with the Argentine companies for the further reduction of rates on

goods shipped from Buenos Aires to Asuncion is needed to obviate the loss of revenue from this class of haul.

CHARACTER OF FREIGHT TRAFFIC.

The following table, covering the fiscal years ended June 30, 1917 and 1918, illustrates the character of the traffic in general freight and live stock:

| Commodities. | 1917 | | 1918 | |
|---------------------------------|---------|-----------|---------|-----------|
| | Tons. | Receipts. | Tons. | Receipts. |
| | 2,700 | \$31,214 | 2,860 | \$34,226 |
| Parcels and excess baggage..... | | | | |
| Forest products: | | | | |
| Timber in logs, etc..... | 28,486 | 59,571 | 45,770 | 97,072 |
| Sawed timber..... | 3,268 | 7,266 | 6,588 | 16,502 |
| Ties..... | 158 | 282 | 364 | 725 |
| Firewood..... | 20,732 | 15,402 | 24,699 | 17,077 |
| Tanning bark..... | 90 | 195 | 32 | 63 |
| Total..... | 52,729 | 82,716 | 77,453 | 131,439 |
| Stock products: | | | | |
| Hides..... | 3,888 | 15,563 | 3,885 | 14,935 |
| Wool..... | 34 | 224 | 50 | 336 |
| Hair..... | 39 | 287 | 47 | 341 |
| Bones..... | 16 | 49 | 54 | 151 |
| Grease..... | 368 | 2,409 | 345 | 2,671 |
| Meat..... | 6,974 | 18,439 | 6,943 | 18,220 |
| Total..... | 11,319 | 36,971 | 10,774 | 36,654 |
| Building materials: | | | | |
| Bricks and tiles..... | 8,665 | 5,908 | 6,686 | 4,545 |
| Stone..... | 17,977 | 11,577 | 8,351 | 5,835 |
| Lime..... | 988 | 3,752 | 579 | 2,813 |
| Kaolin..... | 72 | 156 | 34 | 78 |
| Total..... | 27,702 | 21,393 | 16,150 | 13,271 |
| Oranges..... | 19,300 | 44,811 | 14,742 | 37,647 |
| Bananas..... | 13 | 34 | 8 | 15 |
| Other fruits..... | 25 | 49 | 22 | 29 |
| Vegetables..... | 602 | 1,786 | 950 | 2,759 |
| Yerba..... | 1,318 | 8,531 | 1,554 | 10,064 |
| Tobacco..... | 7,309 | 39,326 | 7,676 | 43,847 |
| Maize..... | 4,244 | 11,237 | 2,806 | 8,273 |
| Wheat..... | | | 25 | 73 |
| Coffee..... | 14 | 78 | 16 | 107 |
| Sugar cane..... | 5,821 | 3,304 | 6,066 | 4,098 |
| Sugar..... | 1,130 | 6,648 | 1,175 | 7,149 |
| Spirits..... | 695 | 4,832 | 984 | 5,426 |
| Wine..... | 252 | 1,728 | 343 | 2,482 |
| Rice..... | 228 | 1,377 | 366 | 2,195 |
| Manioc flour, etc..... | 156 | 370 | 208 | 908 |
| Starch..... | 317 | 774 | 326 | 1,022 |
| Peanuts..... | 613 | 1,669 | 1,083 | 2,740 |
| Coconuts..... | 393 | 968 | 128 | 394 |
| Castor oilseed..... | 40 | 63 | 115 | 170 |
| Oil..... | 50 | 282 | 42 | 224 |
| Hay..... | 2,992 | 5,392 | 4,373 | 8,682 |
| Flour..... | 3,420 | 13,456 | 3,360 | 15,982 |
| Bran..... | 287 | 1,041 | 435 | 1,723 |
| Sundry products..... | 399 | 1,329 | 957 | 4,098 |
| General goods: | | | | |
| First class..... | 1,776 | 15,013 | 1,672 | 15,699 |
| Second class..... | 1,507 | 9,855 | 1,545 | 9,645 |
| Third class..... | 1,804 | 11,008 | 2,632 | 17,242 |
| Fourth class..... | 1,234 | 5,334 | 886 | 3,801 |
| Sundries..... | 7,933 | 21,043 | 8,160 | 26,148 |
| Total goods..... | 155,622 | 352,447 | 167,032 | 413,701 |
| Live stock: | | | | |
| Cattle..... | 5,990 | 23,481 | 6,014 | 21,826 |
| Other animals..... | 658 | 2,565 | 352 | 1,801 |
| Total..... | 6,638 | 26,046 | 6,366 | 23,627 |
| Total of all traffic..... | 164,960 | 409,707 | 176,258 | 471,554 |

The total volume of freight traffic for the year ending June 30, 1919, was 205,484 tons.

The following table shows the comparative position of the various classes of freight at different periods:

| Commodities. | | 1907 | 1913 | 1918 |
|------------------------------------|----------------|-----------|---------|---------|
| Maize..... | tons.. | 2,146 | 2,819 | 2,806 |
| Yerba..... | do. | 784 | 1,086 | 1,554 |
| Tobacco..... | do. | 2,508 | 5,048 | 7,676 |
| Oranges..... | do. | 2,921 | 2,112 | 14,742 |
| Meat..... | do. | 6,323 | 7,119 | 6,943 |
| Forest products..... | do. | 60,147 | 71,210 | 77,453 |
| Building materials..... | do. | 15,207 | 12,580 | 16,150 |
| Rice, bran, manioc, etc. | do. | 801 | 994 | 1,335 |
| Flour..... | do. | | 2,719 | 3,30 |
| Hay..... | do. | 3,014 | 1,980 | 4,373 |
| Hides..... | do. | 5,972 | 7,275 | 3,385 |
| Wool, hair, etc..... | do. | 663 | 768 | 498 |
| Sugar, wine, and spirits..... | do. | 1,709 | 3,440 | 2,502 |
| Sundries..... | do. | 23,343 | 35,821 | 21,257 |
| Total weight..... | do. | 125,628 | 154,971 | 167,038 |
| Receipts from general freight..... | U. S. dollars. | a 179,554 | 365,552 | 413,701 |
| Live stock: | | | | |
| Cattle..... | number.. | 65 | 5,554 | 12,028 |
| Other animals..... | do. | 284 | 5,065 | 987 |
| Total..... | do. | 349 | 10,619 | 13,015 |
| Receipts from live stock..... | U. S. dollars. | | 7,976 | 23,627 |

a Includes receipts from live stock.

Receipts from the transportation of tobacco is a steadily increasing source of revenue to the railway, both in local and international traffic. The same is true of timber, as the weight of most of the Paraguayan woods unfits them for transportation either by the ordinary river boats or in rafts. Sugar cane and sugar should both be increasing items in the traffic receipts, in view of the present progress of that industry, most of which is centered along the line of the railway. The future of the orange traffic depends in large part on the ability of the Paraguayan fruit to hold its place in the Argentine market.

A continued fall in the exports of live cattle, due to the large consumption of cattle by the frigorificos, must react to the disadvantage of the railway. None of the three packing plants is located on the line of the railway, though the Swift frigorifico at Zeballos-cue is within a short distance of the Trinidad station. However, the management of the railway anticipates that its business in general will profit indirectly from the impulse given to all national industries by the large investments of American capital in the meat-packing business. Most of the products of the frigorificos will very probably continue to go out by the river, as will also the quebracho extract produced along the Alto Paraguay. One of the most important traffic needs of the railway is an increase in its business of carrying foreign manufactured goods from Buenos Aires to Asuncion.

MINOR RAILWAYS.

The following list includes the remaining railways of Paraguay, with their approximate mileage.

| Companies. | Terminals. | Kilo-meters. | Miles. |
|---|--------------------------|--------------|--------|
| Eastern Paraguay: | | | |
| Compañía Industrial y Comercial Norte del Paraguay. | Concepción-Horqueta..... | 44 | 27 |
| Quebracholes Fusionados..... | Puerto Max..... | 20 | 12 |
| Devoto, Carbón y Cía..... | Puerto Ibapobo..... | 24 | 15 |
| La Azucarera Paraguaya..... | Tebicuary..... | 13 | 8 |
| Chaco: | | | |
| Quebracholes y Estancias..... | Puerto Galileo..... | 32 | 20 |
| Campos y Quebracholes..... | Puerto Sastré..... | 44 | 27 |
| Compañía de Tierras Carlos Casado..... | Puerto Casado..... | 54 | 34 |
| Sociedad Forestal..... | Puerto Guarani..... | 23 | 16 |
| International Products Co..... | Puerto Pinasco..... | 70 | 44 |
| Total..... | | 327 | 203 |

All the Chaco lines and the Puerto Max line are properties of quebracho companies and only serve for bringing out logs of this wood to the extract plants which are located at the ports named. The Puerto Ibapobo line is purely a logging railway. The short line operated by the Azucarera Paraguaya is used for carrying cane to the sugar factory at Tebicuary.

The Ferrocarril del Norte, which now runs from Concepcion as far as Horqueta, was originally built mainly for the purpose of bringing logs to the sawmill of Guggiari, Gaona y Cía. The line now belongs to the Compañía Industrial y Comercial Norte del Paraguay, which represents a combination of the Guggiari, Gaona, and Quevedo interests. The line has been opened to traffic as a common carrier. This company holds a very liberal concession from the Paraguayan Government for the extension of its line to the Brazilian border. This concession grants the company considerable blocks of valuable lands on both sides its line, on condition, however, that these lands be colonized. The ultimate terminal of the railway will be at either Bella Vista or Pedro Juan Caballero, both of which are situated on the Brazilian frontier. It is proposed that this line should link up with another railway which would make connections, probably at Aquidavána, with the Porto Esperança-Sao Paulo Railway.

RAILWAY PROJECTS.

There have been numerous schemes for building more railroads in Paraguay, and several concessions have been granted, only to be canceled later for failure to carry out the conditions of the agreement made with the Government. The most persistent of these projects has been that for a line to cross the Republic from Asuncion eastward to the Alto Parana. One of these routes, that of the so-called "Trans-Paraguay," was planned to follow the line of the towns of Altos, Ajos, and Caaguazu and across the zone of the yerbales to the Parana at about the mouth of the Iguazu. At this point it would make connections with the proposed Curityba-Iguazu line, thereby giving an outlet over the Sao Paulo-Rio Grande Railway.

to the Atlantic at the fine bay of Sao Francisco. The line from Curityba to the mouth of the Iguazu is now in process of construction.

The Borja-Iguazu branch of the Central Paraguay has the same objective as the Trans-Paraguay, but its western terminus lies at a distance of 170 kilometers (106 miles) from Asuncion. Large sums have been spent in studies of this route, but the project of reaching the Alto Parana has been indefinitely suspended. At present the finished section of this line serves only for taking out logs for the Fassardi Lumber Co., and without a very radical improvement in its finances there is no probability of the Central Paraguay Co. completing the 175 kilometers that yet remain. Though it would require the construction of less mileage than would the more northerly route, it would cross more difficult country, since the Trans-Paraguay would avoid the higher ranges of hills in the center of the country. Electrification of either of these lines from the Falls of the Iguazu or from falls on the Paraguayan side should be quite feasible.

A railway across the center of the Republic would undoubtedly open large areas to settlement and promote the advancement of the interior, which is now virtually without communications. It would also bind the country along the upper reaches of the Parana more closely to the region about the Alto Paraguay and the railway, where most of the life of the Republic is now concentrated. The only connections at present between these two zones is around by Encarnacion or overland by trails through the forests.

ASUNCION TO BRAZILIAN COAST.

It is doubtful whether there would be sufficient traffic for many years to justify the building of a through connection between Asuncion and the Brazilian coast. For trade between Paraguay on the one hand and Europe and the United States on the other, the saving in distance and time would be considerable, as its present routing southward through the River Plate carries it over a thousand miles and at least two weeks in time away from its ultimate destination. An Asuncion-Sao Francisco line would have the effect of eliminating the two longer sides of a triangle. A disadvantage of the direct connection with the Atlantic coast would be the necessity of raising all freight over the serras of the Brazilian State of Parana, which run parallel to the coast. However, the possibility of utilizing the hydroelectric power within that region as the motive force for the railway should lessen considerably the force of this objection.

In a consideration of the merits of this line it must be remembered that the Paraguayans, in their anxiety to free their country from its burdensome dependence on the single outlet through Argentina, are somewhat disposed to exaggerate the economic advantages of the proposed route to the Atlantic coast. They believe that their commerce, as well as their position in international politics, would profit greatly from their possession of an alternative outlet through Brazil. For some time the international traffic of Paraguay can not be sufficient to guarantee the profitable operation of two competing railway lines. The completion of the proposed extension of the Santa Fe Railway to the mouth of the Pilcomayo, almost opposite

Asuncion, would offer only an additional element of competition to the Central Paraguay, though its rivalry could not be so serious as would be that of the railway to the Bay of Sao Francisco. The Porto Esperanca-Santos railway connection lies too far to the north to serve as a practicable outlet for Paraguayan commerce.

OTHER RAILWAY PROJECTS.

Among other railway projects in Paraguay is that for a line to run the length of the Misiones zone of the Republic. Such a railway would probably leave the Central Paraguay at Paraguari and make connections with it again at Encarnacion. There is no doubt of the urgent need of this region for improved communications, but it is possible that a road over which motor trucks could operate would be preferable to a railway line. Projects for a railway across the Paraguayan Chaco to Bolivia still belong in the same realm with schemes for navigating the Pilcomayo.

RIVERS.

Paraguay has over 2,000 miles of internal rivers on which barges can be floated. The most important of these streams are the Jejuy and the Tebicuary, with their branches, but the Ipane, Monday, and Acaray are among the other rivers which are utilized for transporting the products of the country.

The "chata," the typical freight-carrying craft of these rivers, is a barge or lighter with a sharp bow, an almost flat bottom, and with curved sides standing from $1\frac{1}{2}$ to 3 feet out of the water. When loaded, they draw from 2 to 4 feet of water. Their capacity generally ranges from 10 to 100 tons, though large chatas have been built for service on the Paraguay with a capacity of 600 tons of cargo. Those used on the internal rivers are propelled by poling, but on the Paraguay and the Parana they are drawn by tugs or launches.

Some of the large industrial enterprises such as La Industrial Paraguaya make the chatas which they use. Others are made in the shipyards of Asuncion or Concepcion. The principal yards in Asuncion are: Astillero Naval "San Isidro"; Jose Bozzano; and A. Cusmanich e Hijos. These plants are also equipped to build launches and other small steamers, and they make repairs on all kinds of river craft.

For the purpose of its foreign commerce and also of communication between different parts of the country, Paraguay is fortunate in its situation on two great navigable rivers, the Paraguay and the Alto Parana. The natural characteristics of these rivers have been described in the introductory chapter.

THE PARAGUAY RIVER.

The Paraguay, which constitutes the principal commercial artery of the Republic, has few equals among the navigable streams of the world. At present 1,000-ton vessels operate to Corumba, 1,800 miles above Buenos Aires, for most of the year, while smaller steamers

ascend several hundred miles farther to Cuyaba, the capital of the Brazilian State of Matto Grosso.

Though the limit for navigation by ocean-going steamers is generally placed at Parana-Santa Fe, during about three months of the year ships of this type could reach Asuncion without difficulty. With the dredging of a few short stretches of the river's course vessels of 2,000 tons draft should be able to reach Asuncion throughout the year, except in seasons of unusually low water. At present the ordinary type of river steamer plying to Asuncion draws between 6 and 8 feet when loaded. The time of lowest water is during the months of November, December, and January, and the highest stage is reached in April, May, and June. During the former season the river may fall so low that the regular Buenos Aires-Asuncion packets are forced to transfer cargo and passengers at one of the "passes" to vessels of lighter draft. This not only results in delay, but merchandise shipped at such times is obliged to pay an additional 20 per cent over the regular freight rates.

The principal "passes" below Asuncion in the Paraguay are those at Angostura, between San Antonio and Villeta, where the channel is narrow and the bottom sandy, and that of the Tres Bocas, at the confluence of the Parana and the Paraguay. During a season of low water pilots can not count on more than $5\frac{1}{2}$ or 6 feet of water at these points. There have been several projects before the Paraguayan Congress for dredging the "passes" in cooperation with the Argentine Government, but nothing has yet been done in this direction. Except for these few short stretches, the remainder of the course of the Paraguay-Parana is wide and deep.

The Mihanovich Line transships freight at Asuncion to its smaller steamers which ply on the Alto Paraguay, as the river is known above Asuncion. However, the Brazilian boats between Montevideo and Corumba do not break their voyage between these two points. On this section of the river there are a number of "passes" which impede navigation during times of low water. The first of these is at Romano Castillo, a short distance above Asuncion. Others are at Pedernal, above Villa Rosario; the narrows at Concepcion; the bad Ita-Curubi pass, a short distance above Concepcion; the rocky passage directly below San Salvador, known as the "Paso Peña"; the dangerous Arrecife, or "reef," pass a few miles above this point, where vessels are compelled to make an S curve at times of low water in order to keep clear of the rocks; and the passes of Palacios-cue and Itapucu, the last near the Brazilian border.

In nearly all these passes the obstacles consist of rocks in the channel, instead of sandbars, as in the lower river. At low water there is only 4 to $5\frac{1}{2}$ feet in the channel at these points, and at Puerto Fonciere there is a large rock in mid-channel about 3 feet below the surface. However, these passes of the Alto Paraguay are generally short, and the obstructions could be removed by blasting.

Approximate distance between Asuncion and the principal points on the upper and the lower river are as follows:

| Upper River (Alto Paraguay) : | Miles. | Lower River (Paraguay-Parana-Plata) : | Miles. |
|-------------------------------|--------|---------------------------------------|--------|
| Concepcion | 250 | Pilcomayo, Argentina | 16 |
| San Salvador | 279 | San Antonio | 20 |
| Puerto Pinasco | 328 | Villeta | 29 |
| Puerto Sastre | 400 | Formosa, Argentina | 120 |
| Puerto Guarani | 476 | Pilar | 194 |
| Fuerte Olimpo | 504 | Humaita | 219 |
| Bahia Negra | 607 | Tres Bocas | 282 |
| Porto Esperanca | 685 | Corrientes, Argentina | 270 |
| Corumba | 765 | Santa Fe | 650 |
| | | Rosario | 780 |
| | | Buenos Aires | 1,023 |

For its course between the mouth of the Pilcomayo and Puerto Sastre the Paraguay is an exclusively Paraguayan river. Between Pilcomayo and the Tres Bocas the right bank is Argentine territory, and the left bank above Puerto Sastre is Brazilian. This long extent of river frontier makes contraband operations very easy.

PORT OF ASUNCION.

The present port facilities of Asuncion are inadequate to the needs of the country's commerce, and such as exist have fallen into a state of deterioration. The wharves consist of a long embankment which is faced and paved with stone, and of two wooden piers which extend out, respectively, about 40 feet and 250 feet from the embankment proper. The wharves are supplied with steam cranes and with tracks for carrying goods into the customhouse. Some of the beams and piling of the piers show signs of weakening and the flooring is in urgent need of renewal. In some places, where the planking has rotted, there are holes large enough for a man to fall through.

Most of the steamers which regularly make this port load and unload at the wharves, but some boats lie out in the bay and are loaded and unloaded by means of lighters. Vessels of the large companies which have fixed schedules of sailings are generally able to clear on time, but the slowness of stevedoring operations and the lack of space at the wharves are liable to hold a boat in port several days longer than should be necessary. "Slingage" charges, amounting to 1.50 gold pesos per ton, are also levied on all merchandise which passes through the port.

In October, 1915, the Paraguayan Government granted a concession for the construction of a new system of port works to a New York engineering firm. "The Construction & Engineering Finance Co.," in whose name the concession was held, was created by the former corporation for the express purpose of building the port of Asuncion. The concessionaire company drew up plans for a system of docks to parallel the shore of the bay for about 500 meters, with a total area of about 15,000 square meters. These docks were to have accommodations for 13 vessels at once, of which 5 could be 80 meters in length and the rest of the size used in the up-river service. The company promised facilities for discharging 1,400 tons of cargo and taking on an equal amount within 12 hours, and was also

to provide ample warehouse accommodations for the storage of freight. All the equipment of the port was to be of the most modern type. The concession also provided for the dredging of the harbor to admit larger vessels to the wharves and for the administration of the port by the company for a period of 99 years.

No serious work was done on the project within the time limit set in the concession, the concessionaires later invoking the circumstances of the war as constituting force majeure in justification of their delay in taking up the work. Five successive extensions of time were granted to the company, but the Government finally refused to recognize the requests of the concessionaires for further prorogation. On February 21, 1918, the President of the Republic issued a decree to the effect that the concession would be held as annulled after June 18 of that year. The company later protested against the action of the Government and took up negotiations for a reconfirmation of its concession, but was unable to secure a renewal.

At the public landing place at Concepcion vessels are tied up to the shore for loading and unloading. A wall which was built several years ago to serve as a port for the city proved too high when completed, except for operations at times of high water. The larger private companies with establishments on the river, such as the frigorificos, quebracho plants, and sawmills, have their own wharves, made by driving a few dozen piles into the river and flooring them over. The native woods close at hand make excellent materials for piers, yet the most important of the minor towns on the river do not have even the most rudimentary wharf.

The number of vessels entering and clearing from the port of Asuncion during 1918 was as follows:

| Flag. | Entered. | | Cleared. | |
|-----------------|----------|----------|----------|----------|
| | Number. | Tonnage. | Number. | Tonnage. |
| STEAM. | | | | |
| Paraguayan..... | 1,439 | 96,387 | 1,443 | 97,733 |
| Argentine..... | 321 | 172,163 | 312 | 169,802 |
| Uruguayan..... | 17 | 4,927 | 17 | 4,788 |
| Brazilian..... | 29 | 5,216 | 30 | 4,784 |
| Bolivian..... | 7 | 974 | 8 | 1,000 |
| SAILING. | | | | |
| Paraguayan..... | 1,751 | 97,912 | 1,746 | 96,371 |
| Argentine..... | 102 | 29,919 | 110 | 30,728 |
| Uruguayan..... | 12 | 2,152 | 11 | 2,035 |
| Brazilian..... | 27 | 7,597 | 28 | 6,919 |

COMPAÑIA ARGENTINA DE NAVEGACIÓN (MIHANOVICH).

This company dominates the commerce of the great fluvial system which terminates in the River Plate, but its control over the foreign trade of Paraguay is more complete than over those parts of Argentina and Uruguay, which are naturally tributary to the rivers. Its boats, with the characteristic letter "M" on the funnels, are seen as high as Corumba on the Alto Paraguay, Posadas on the Alto Parana, and Salto on the Uruguay.

This navigation company, which is still known by his name, was built up by Nicolas Mihanovich, a Dalmatian, who went out to

Montevideo in 1866 as a common sailor. He later passed through the rank of captain of a river boat to the position of an independent operator, meanwhile gradually extending the sphere of his activities and increasing his fleet of vessels.

In 1903 he founded a joint-stock company, with a capital of 6,000,000 gold pesos, which was raised to 7,000,000 pesos in 1908. The next year there was constituted the Compañía Argentina de Navegación (Nicolas Mihanovich, Ltda.), with a capital stock of £2,600,000 (\$12,653,000). Since then the Mihanovich Co. has completed its ascendancy on the Paraná-Paraguay by the purchase of one after the other of the competing lines, with the exception of the Brazilian company, which has maintained a rather fitful service between Montevideo and Corumba. In 1917 it absorbed the fleet of the Marina Mercantil Argentina for the consideration of £650,000 (\$3,163,225). The next year it purchased the passenger boats of the Domingo Barthe Co. for £122,150 (\$596,150), which, with its acquisition of the vessels of the Vierci Hermanos Co., gave it a monopoly of the passenger service between Buenos Aires and Asuncion.

The home offices of the company are now located at 41 Threadneedle Street, London, E. C. 2, but the administration is centered at Calle 25 de Mayo 199, Buenos Aires. The board of directors in London is constituted as follows: President, Sir Owen Phillips; vice president, John C. Gibson; directors, T. H. Carlton-Levick, Hubert Giraud, Arthur Cook, and Gaston Bréton; secretary, H. Grugeon. The local Buenos Aires directorate consists of the following members: President, Alberto A. Dodero; vice president, José A. Dodero; directors, Hilary Howard Leng, Luis Dodero, F. L'Estrange Wallace, Pedro Mihanovich; secretary, Luis Lavarello. The actual management of the company's lines is in the hands of Luis Dodero.

The present capital stock of the company amounts to £2,000,000 (\$9,733,000). About half of the stock is held by the Royal Mail Steamship Co., about 22 per cent by Dodero Hnos., Ltda. (Lloyd Americano), and the remainder is owned by Lamport & Holt, Nelson & Co., the Compañía Transatlantica Italiana, and the three French companies—Transports Maritimes, Sud Atlantique, and Chargeurs Réunis.

MIHANOVICH PASSENGER SERVICE.

The Mihanovich Co. maintains five passenger lines on the Paraguay, as follows: Buenos Aires to Asuncion, biweekly; Asuncion to Corumba bimonthly; Asuncion to Bahia Negra, bimonthly; Asuncion to Concepcion to Puerto Max, weekly; Asuncion to Pilar to Humaita, biweekly. There are two sailings per week between Posadas and Corrientes, at which point connection is made with the boats from Buenos Aires.

The steamers in the Buenos Aires-Asuncion service leave Buenos Aires on Sundays and Thursdays and Asuncion on the same days. Four steamers are employed on this run. The upriver trip requires a little over four days and the return about three days. The fares for passage between the two cities are as follows: First class, one way, 110 Argentine pesos (\$46.75); round trip, 192.50 pesos (\$81.75); second class, one way, 55 pesos (\$23.35); round trip, 96.25 pesos (\$40.90). The round-trip tickets are valid for three months. The

baggage allowance is 50 kilos (110 pounds), but this maximum is liberally interpreted. Accommodations are very comfortable, and in general the trip is one of the most pleasant that can be made in South America.

On the lines north of Asuncion fares are higher and accommodations for travelers are poorer. Between Asuncion and Buenos Aires the Mihanovich steamers are forced to compete with the international train, but in the Alto Paraguay there is no competition whatever. Stops are more frequent, as the steamers heave to at any estancia house on the banks where a signal gun is fired or for which there happens to be cargo or passengers. Moreover, the steamers tie up at the shore for two or three hours each day, while enough firewood is taken on to stoke the boilers until another woodpile is reached the next day. This wood costs the company at the rate of 3 centavos gold per stick.

Although the service is much inferior to that on the larger Buenos Aires-Asuncion steamers, the boats themselves are comfortable and the scenery is more picturesque than in the more low-lying country through which the river flows to the south. The time ordinarily required for the trip between Asuncion and some of the more important points on the upper river is as follows: To Concepcion, 40 hours upstream, 27 hours downstream; Puerto Pinasco, 54 and 33 hours; Bahia Negra, 84 and 77 hours; Porto Esperanca, 90 and 81 hours; Corumba, 96 and 85 hours.

The fare to Corumba is 90 gold pesos, or at the rate of over 11 cents per mile. A ticket purchased in Corumba for Asuncion costs 495 milreis, which is equivalent to approximately \$125, or nearly 17 cents per mile.

FREIGHT SERVICE OF THE MIHANOVICH LINE.

For fast freight the Mihanovich Co. uses its regular passenger packets, but for most of the ordinary heavy freight it operates a fleet of special cargo steamers, besides tugs for drawing lighters. Though its hold on freight traffic has not been so complete as in the case of passenger traffic, yet most of the carrying business of the river is still in its hands. Such competition as existed until recently was not serious enough to affect the scale of freights maintained by the all-powerful "Mihanovich." During the period of the war these schedules rose to a point where in many lines they threatened to be prohibitive, and in fact amounted to more than the freights from Buenos Aires to Europe or the United States. They constituted an intolerable burden on the foreign trade of the country, and local business interests were loud in their complaints against "the monopoly of the Mihanovich."

Inducements were offered to foreign capital to introduce a competitive service on a scale sufficient to free Paraguayan commerce from its dependence on the Mihanovich tariffs—an attempt that would probably require the investment of \$5,000,000 to make it more than temporarily effective. Projects were also introduced into Congress for the establishment of a Government-owned fleet of tugs and lighters, which would put local business in a position to boycott the Mihanovich Line. However, nothing came of these proposals and protests, and the extreme war-time scale of rates remained in force.

until the Brazilian Companhia Mínas e Viacão de Matto Grosso began operations during the winter of 1919. But, in recognition of the usual dependability of the Mihanovich service, local interests were slow to transfer their patronage to another company that would not assure them equal efficiency.

In August, 1919, the Mihanovich Co. announced a reduction in their tariffs on practically every class of freight, except quebracho extract and cereals, in order to meet the Brazilian company's offer of a 25 per cent lower scale than was in force at the time on the Mihanovich lines. It, moreover, offered a rebate amounting to between 5 and 14 per cent to shippers who would use its boats or those of the Barthe Co. exclusively for a year.

The cut in the Mihanovich freight rates per metric ton, with equivalent rates in United States currency per 100 pounds, is indicated by the following: Tobacco, from 62 Argentine pesos per ton (\$1.20 per 100 pounds) to 45 pesos per ton (\$0.87 per 100 pounds); yerba, ground, from 50 pesos (\$0.97) to 45 pesos (\$0.87); yerba, un-ground, from 75 pesos (\$1.45) to 65 pesos (\$1.25); dry hides, from 90 pesos (\$1.73) to 70 pesos (\$1.35).

The Brazilian company's rate on dry hides from Asuncion to Montevideo is 0.30 Uruguayan gold peso (\$0.31) per hide, and on salted hides is 18 Uruguayan gold pesos per metric ton (\$0.85 per 100 pounds).

The rates on general cargo shipments from the River Plate to Asuncion by the different rail and river lines is as follows (November, 1919):

Mihanovich Line.—Montevideo to Asuncion, by cargo boat, 31 Argentine pesos per metric ton (\$0.60 per 100 pounds); by packet, 35 pesos per ton (\$0.68 per 100 pounds); Buenos Aires to Asuncion, by cargo boat, 26 pesos per ton (\$0.50 per 100 pounds); by packet, 30 pesos per ton (\$0.58 per 100 pounds).

Companhia Minas e Viacão.—Montevideo to Asuncion, 13 Uruguayan gold pesos per ton (\$0.61 per 100 pounds).

Central Paraguay Railway.—Buenos Aires (Lacroze station) to Asuncion, 20 tons minimum, 25.50 pesos per ton (\$0.48 per 100 pounds); 10 tons minimum, 31 pesos per ton (\$0.60 per 100 pounds); 100 kilos minimum, 48 pesos per ton (\$0.93 per 100 pounds).

COMPANHIA MINAS E VIACÃO DE MATTO GROSSO.

As its name expresses, this is a mining and transportation company. Its mining properties consist of vast deposits of manganese ore located near Corumba, in the Brazilian State of Matto Grosso. As a transportation company it operates a short railroad connecting its mines at Urucum with the river at Ladario and a fleet of vessels for service on the Paraguay-Parana. During 1920 it has planned to send out 10,000 tons of ore a month by these steamers to Montevideo, where it will be transshipped to the United States.

The share stock of the company amounts to 4,000,000 milreis, equivalent to about \$1,000,000 United States currency, and the capital obtained by loans amounts to 3,000,000 milreis, or \$750,000. The fleet which the company controls represents a further value of over 10,000 contos of milreis, or about \$2,500,000. The president of the company is Dr. A. Lisboa, formerly director of the Central Railway

of Brazil. The central offices are in Rio de Janeiro. There are also agencies in Montevideo, Asuncion, and Corumba. The actual administration of the company's traffic department is centered at Montevideo.

The present fleet of the company consists of four steamers of 150 to 370 tons, two of 600 tons each, and two of 1,000 tons. The latter, the *Cáceres* and the *Miranda*, are the largest boats using the Paraguay River. In addition to these, there are 36 lighters, three of which are of 700 tons burden each, representing a total tonnage of 8,165. There are also eight tugs in the fleet. Twenty oil-burning steamers have been contracted for construction in the United States, to be employed in the company service.

Most of the vessels in the existing fleet have been rented from the Lloyd Brasileiro, which before the war maintained a navigation service on the Paraguay-Parana. In fact, a very close relation exists between the two companies. The Brazilian Government exercises a large measure of control over the operations of the new company's transportation service and the officers of the company's boats are at the same time officers in the national navy. The Lloyd's schedule was too intermittent to be relied upon and its operations were in general too leisurely, but its successor has promised local shippers the same facilities offered by the Mihanovich Co.

The Companhia Minas e Viamão plans to operate at least one boat a week between Corumba and Montevideo. The only Argentine port of call is Rosario, as the Argentine law prohibits foreign-owned ship companies from carrying on a coastwise trade between Argentine ports. In Paraguay its vessels call at Asuncion, Concepcion, and other river ports. The company has promised to facilitate the transshipment of merchandise at Montevideo between ships plying from the United States and Europe and its own river boats. As the expense and delays occasioned by transshipment at River Plate ports have been one of the greatest obstacles to Paraguay's foreign commerce, any attempt to relieve this condition and establish more direct and expeditious connections with the outside world is heartily welcomed by Paraguayan commercial interests.

OTHER NAVIGATION COMPANIES.

Among other freight services offered to Paraguayan shippers are those maintained by the Domingo Barthe Co. and Augusto Bisso. Though the Barthe interests are largely confined to the Alto Parana region, this company still operates freight boats between Asuncion and Buenos Aires. By an agreement with the Mihanovich Co., they offer the same scale of freights as are in force on the former line. Augusto Bisso has chartered a number of freighters and is now conducting a general shipping business between Puerto Max, Concepcion, Asuncion, and the River Plate. Among shipping agents in Buenos Aires who represent minor independent freight services between that port and Asuncion is Carlos Montaldo, Calle Cangallo 382.

Several of the large commercial and industrial companies operating in Paraguay have a transportation department exclusively for their own carrying business. The traffic department of the Central

Products Co. (American) employs six tugs and a fleet of lighters between Puerto Pinasco and San Antonio and Buenos Aires. The firm of Rius y Jorba ship tobacco and hides to Buenos Aires in their own boats and bring back merchandise to their stores. The mercantile house of Gaudino, Salsa y Cía. runs boats up the Alto Paraguay as far as Bahia Negra. Other companies which possess their own facilities for shipping are the Société Francaise d'Exportation, the Compañía Comercial y Industrial Norte del Paraguay, and the quebracho company of Carlos Casado.

ALTO PARANA RIVER.

The Alto Parana is of much less importance in the industrial life of the Republic than is the Paraguay. Also, for most of its length it is much less suited for purposes of navigation.

The towns of Encarnacion and Posadas, which lie opposite each other, one on the Paraguayan side and the other on the Argentine side, mark a clearly defined stage in the commercial geography of the Alto Parana. It is the point where the railway connection is made between the two countries, and it is the point of transshipment for all freight destined for the regions along the upper reaches of the river. Between these towns and the junction with the Paraguay the country is largely given up to cattle raising and agriculture. On one side is the Argentine Province of Corrientes and on the other the lower end of the Paraguayan Misiones. The principal point for shipments on the Paraguayan side is the town of Ayolas.

The river is wide, with low banks, and its course is much like that of the lower Parana. The most serious obstacle to navigation is the Salto, or Rapids, of Apipe, which forces the transshipment of goods at Corrientes to smaller steamers capable of clearing this pass. The upriver time between Corrientes and Encarnacion-Posadas is 36 hours. The carrying business of this section of the river is almost entirely divided between the Mihanovich and Barthe companies.

The upper section of the river comprises the 500 kilometers between Encarnacion-Posadas and the limit of navigation at Porto Mendez. From the latter point the Larangeira yerba company operates a short railway around the Falls of the Guayra to Porto Mojoli. This zone of the river is in a more undeveloped state than is the country which borders the lower section. It is given up to lumbering and the exploitation of yerbales and to a few agricultural colonies like that of Hohenau. Population is very sparse, and on the Paraguayan side there are no settlements that could be classed as towns. The most considerable place on the river is the Brazilian town of Foz do Iguazu.

The "ports" along the river are merely places for loading lumber or yerba or other products of the region, and usually consist of a few rough buildings on the high bank and a long chute for lowering these products to the landing place. The most important of these are Cantera, Guarapay, Nacunday, Villa Azara, Embalse, Tacurupucu, and Adela. The land adjoining the river is held in vast tracts by a few large companies, among which are those of Barthe, comprising 412 leagues (1,125 square miles); Herrera Vegas; Nuñez, Gibaja y Mar-

tinez; and La Industrial Paraguaya, with 1,160 leagues (3,130 square miles).

A short distance above Encarnacion-Posadas the river becomes narrower and swifter, flowing between high, wooded banks that grow increasingly picturesque as the boat ascends higher up the river. Navigation is made difficult by reefs and swirling currents, and in the winter by fogs that settle over the river at night, forcing steamers to tie up until the fog lifts the next morning. Three different companies operate steamers on this stretch of the Parana, those of Barthe; Nuñez, Gibaja y Martinez; and Juan B. Mola. These boats carry out the products of the properties belonging to their owners and do a general freight and passenger business. Four or five steamers are employed in this service, with sailings about every two days from Posadas. Passenger traffic, for which very fair accommodations are provided, is confined mainly to tourists bound for the Falls of the Iguazu, and in the second class, to peons on their way to the lumber camps. The time required for the trip to Puerto Aguirre or to Foz do Iguazu, where passengers leave the steamer for the cataracts, is about 70 hours.

TELEGRAPHHS.

As is general throughout South America, the Paraguayan telegraphs are Government owned. There are about 2,050 miles of wire, distributed among the following lines:

Southeastern: From Asuncion through the Misiones, branching off at Santiago to Encarnacion.

Southern: Follows the Paraguay River to its junction with the Parana, where it makes connections with the Argentine system.

Northern: Follows east side of the Paraguay River as far as Puerto Max.

Cordillera: Covers the highland country to the east of Asuncion.

The entire Alto Parana country above Encarnacion is without telegraphic connections. It is planned shortly to extend a line up the Chaco side of the Alto Paraguay, through the quebracho ports, and as far as Bahia Negra. There are wireless connections between Asuncion and the principal garrison towns, but private messages can not be sent by this means, except in relaying messages to Buenos Aires.

Telegraphic communications with the outside world pass through Buenos Aires, except for such messages as are sent into Brazil and Uruguay through Uruguyana and Concordia. Messages to Buenos Aires are routed by way of the southern line through Corrientes. According to a convention put into effect between the two Governments in 1919, when the wires are not working messages may be transmitted by the Argentine wireless stations via Formosa. Rates for telegrams to Buenos Aires during October, 1919, by either way, were 4.18 Paraguayan pesos for the first 10 words and 42 paper centavos for each additional word.

At Buenos Aires connections are made with the cable lines for Europe and the United States. Rates for cables from Asuncion to New York were 53 centavos gold per word (October, 1919), and to London and Paris 69 centavos.

The foreign telegraphic connections of Paraguay are very unsatisfactory. There are frequent interruptions and delays lasting for days at a time, due to fallen wires or other causes. The wireless has helped little in improving the service. Meanwhile local business men are shut off from the outside world, and newspapers are without their regular telegraphic news. At such times the former are forced to fall back upon use of the mails and the latter upon borrowing from the Buenos Aires papers that are brought to Asuncion by train. For example, although the German delegation signed the peace treaty at Paris on June 28, 1919, the news did not reach Asuncion until July 3, having arrived by mail from Buenos Aires. Private cables are also held up for days in Buenos Aires waiting for transmission, so that frequently a week or more elapses between the dispatching of a cable in New York and its receipt in Asuncion, or vice versa.

LABOR.

THE PARAGUAYAN AS A LABORER.

Some of the qualities which affect the value of the Paraguayan as a laborer have been discussed under the subject of "Population" in the first chapter. In judging the native Paraguayan in this capacity there must be taken into account his peculiar racial characteristics and the special circumstances of his country's history. His defects are largely those of a people whose industrial development on a modern scale has only recently begun, as a consequence of which it is difficult to fit him into the new order of things without a certain amount of friction. Thus he is weak on the side of originality and initiative, and lacks steadiness and sense of responsibility. His average net productivity is markedly lower than that of the labor force of older countries. He averages high enough in natural intelligence to satisfy the ordinary demands of a labor force, but in only a small minority is this intelligence trained. He is apt at imitating and with a little training makes a very good machinist. The fields in which the Paraguayan particularly excels are the care of cattle and horses and working in timber. As a "erbatero," or a worker in yerba, the Paraguayan is in demand across the border in the Brazilian *yerbales*.

Employers who obtain the best efforts from Paraguayan labor generally have in them something of the "caudillo," or chieftain, for the personal element is an unusually important factor in handling the native. An employer who placed his relations with his men on an entirely impersonal basis would most probably soon find himself without workmen. This does not necessarily imply familiarity, but a certain regard for the men's welfare and perhaps for their occasional and somewhat childish whims. Under such conditions personal loyalty to the "patrón" is a factor of great value, whether to the estanciero who employs a dozen cattle peons, or to the head of an industrial organization that employs a thousand workmen.

In places which demand more special capacity than the native usually possesses Argentinians are frequently employed. Some of the more skilled labor is also performed by Italians and Spaniards. However, the native Paraguayans are gradually working into higher positions. On the cattle ranches and in the timber workings the Paraguayan peon has only one competitor—the native of the neighboring Argentine Province of Corrientes. The Correntino, though superior in initiative, is disposed to be more truculent and has a bad name in the country for violence.

ORGANIZATION.

Paraguayan labor is rapidly becoming organized. Many of the trades now have their unions, and the tendency to organize is beginning to spread among the more unskilled class of workmen. The



FIG. 13.—TYPICAL PARAGUAYAN VAQUERO (COWBOY).



FIG. 14.—CREOLE CATTLE, ZEBU STEER IN CENTER.

Special Agents Series No. 199.



FIG. 15.—ITAKYRY, CENTER OF THE YERBALES.



FIG. 16.—STATION ON QUEBRACHO RAILWAY.

employees of stores are organized in an association known as the Sociedad de Empleados de Comercio. In 1915 a combination of several unions was formed as the Federacion Obrera del Paraguay, or Workmen's Federation of Paraguay. The federation now has over 2,000 members, divided among 16 unions. The Centro Obrero Regional del Paraguay, a kind of workmen's central committee, was organized for the declared purpose of combating the increased cost of living.

The work of organizing the laborers is largely done by the foreign element among them, as the natives, when left to themselves, are slow to organize. The most strongly organized and independent class of labor is that employed on the river steamers and as port workers.

WAGES.

Wages for unskilled labor range between 10 and 20 pesos a day for farm hands and cattle peons. In addition the rural workman generally receives his quarters and sometimes his food. The wages received by the majority of this class of workers would be equivalent to between \$12 and \$15 United States gold per month. In the towns laborers of the same category receive from 20 to 30 paper pesos per day, or between \$1 and \$1.50. Members of the trades earn at the rate of \$1.50 to \$2.50 gold per day and some as high as \$3. Steve-dores receive \$2.50 for a day of eight hours, with \$0.50 an hour for overtime. In the frigorificos ordinary workmen are paid about 30 pesos a day, equivalent to about \$1.60 gold. More skilled labor is paid from 40 to 60 pesos per day. In addition the frigorifico workmen receive quarters free of rent.

HOURS.

As a result of the large number of strikes during 1918 and 1919 there has been a shortening of the working day in most lines. In the trades the eight-hour day generally prevails, though a few still work nine hours and the bakers have secured a seven-hour day. The hours of work in the Asuncion stores are 10, and in the frigorificos 9 to 10. In Asuncion the "sábado inglés," or English half holiday on Saturday, has become customary in most stores and offices.

STRIKES.

Strikes have become very common in Paraguay. In fact, it may be said that the Paraguayan laborer learned to strike before he had passed through even his apprenticeship in a modern industrial system. Some of the frequent strikes of 1918 and 1919 have undoubtedly been caused by the pinch of the rapidly increasing cost of living. Others have been sympathetic strikes, entered upon very lightly in the interests of so-called "solidarity."

The contagion of the serious labor troubles in Argentina has had an unsettling effect on Paraguayan labor. Eloquent agitators from the River Plate have attempted to spread their extremist doctrines

in Paraguay and to overthrow whatever has been accomplished toward putting the country on a progressive industrial basis.

A general strike was called for the 1st of June, 1919, but not enough unions responded to the call to affect the ordinary life of the country. However, there have been isolated strikes in several lines of work, the majority of which have been successful in securing a reduction of hours and an increase of wages. Among these have been strikes of bakers, masons, carters, stevedores, and shipbuilders. The railways and the frigorificos have had serious strikes on their hands. The market women and the high-school students have also gone out on strike, the former because of discontent with certain renovations made in the public market, and the latter because the course of study was reformed contrary to their liking.

During the latter part of 1919 a general strike tied up the important town and port of Concepcion for over a month. The strike began with the demand of the employees of the largest company in that region that the superintendent of one of its plants be dismissed within 48 hours and that henceforth the workmen should have the right to secure the dismissal of any superintendent or foreman who might be displeasing to them. About the same time the crew of one of the Mihanovich steamers on the Alto Paraguay quit work because they had not been consulted in the selection of a new captain, and the crews of the other boats on the same part of the river quickly declared a sympathetic strike.

LABOR AND THE COST OF LIVING.

The situation of labor in Paraguay is gravely affected by the fluctuations in the value of the paper peso of the country. While the laborer profited by the rapid valorization of the peso during 1917 and 1918, which almost doubled its value, the corresponding increase in the buying power represented by his wages was gradually offset by the radical rise in prices. The world-wide increase in the cost of living reached Paraguay at a time when it coincided with a manifest rise in the national standard of living, and as a result has been all the more acutely felt. Meetings have been held to consider remedies and much oratory has been spent on local "profiteers," but with the usual lack of positive results. Meanwhile strikes have been resorted to in the belief that successive increases in wages would keep pace with the rise in prices.

No governmental machinery has yet been created to deal with labor difficulties, though proposals have been presented in congress for the establishment of a National Department of Labor, with power to arbitrate strikes. Strikes have been settled by arrangements between employers and representatives of the workmen. There has been little violence, though some friction has been caused by the methods of the police in handling strikers.

Large employers of labor have shown a disposition to consider every means for improving the living conditions of their employees. Medical attention is usually furnished free in case of illness, and comfortable and sanitary quarters are being constructed about most of the large plants.

IMMIGRATION, COLONIZATION, AND LANDS.

IMMIGRATION.

Paraguay is greatly in need of immigration. In the first place, there is the elementary need of more population for the vast unpeopled or thinly settled areas within its boundaries. The country lacks the population necessary for the proper development of its resources, and above all the elements of superior industry and skill which the foreigner brings to the economic life of the country. The natives need the stimulus of the immigrant to stir them from their backward and routine ways and to give them the example of better methods of agriculture and stock raising. It was the failure to realize the full advantage of this factor that permitted the Paraguayan Government to set off the earlier colonies in isolated localities, where they could have only little beneficial influence on the native population, and where they tended all the more to conserve their own national traditions to the detriment of their adopted country. A clearer perception of the dangers and disadvantages of these nuclei of "extranjerismo," or persistence of foreign attachments, has led to a greater assertion of the rights of the nation to locate its colonies with a better view to their utility to itself, and to safeguard its own nationalism against the equivocal loyalty of colonists who deliberately remain apart from the national life.

The only kinds of immigrants which the country welcomes are those who will devote themselves to agriculture and stock raising. There is little place for the two extremes of unskilled laborers and so-called "brain workers." Because of the foreigner's higher standard of living he can not compete with the native in the former field. As regards the other category, there is no opportunity for clerical help and very little for professional men. Though foreign doctors and dentists could be of service to the country, the national examining boards make their entrance very difficult. Small shopkeepers are also advised against coming to Paraguay. There is a certain demand for mechanics and other skilled laborers, but in the present stage of the country's industrial development it would be easy to overstock this branch of the labor market.

NATIONALITY OF IMMIGRANTS.

As for the nationalities preferred, there is no question that a considerable immigration of Germans would be welcomed. In anticipation of an exodus of Germans from their home country it has been proposed in Congress to establish a propaganda and immigration office in Hamburg for the purpose of attracting these emigrants to Paraguay. Paraguay is considered in Germany as a favorable field for settlement by those who desire to leave the "fatherland," and it

is highly likely that there will be a spontaneous movement in that direction without the need of any artificial stimulation by the Paraguayan Government. The Deutscher Volksbund für Paraguay (Union Germanica del Paraguay) has recently published a booklet entitled "Paraguay: Winke für Einwanderer," to serve as a guide for prospective immigrants of that nationality. Similar literature has also been issued in Germany for the same purpose. The anticipated current of German immigration began in September, 1919, when 55 immigrants reached Asuncion, all of whom had left Germany since the end of the war. At present there are about 5,000 Germans in all Paraguay, of whom about 40 per cent are German-Brazilians from the States of Parana and Rio Grande do Sul. The colonies which contain the largest number of Germans are Hohenau, Nueva Germania, Nueva Italia, and Yegros. Many are also scattered among the larger towns. In Asuncion Germans have established strong firms like those of Krauch, Minner & Meilecke and the two leading hardware houses in the city.

Italian immigration, particularly from north Italy, is looked upon with favor in Paraguay, though any considerable influx of Italians is not anticipated in the near future. The present Italian population in Paraguay numbers about 6,000. They are well organized and are found in all branches of the country's industrial life. The Italians have been a most important element in the development of the country during the past few decades and many of the most prominent business men of the Republic are of that nationality. As a rule the Italian immigrant has done better when left to his own initiative than in the colonies.

The Spaniards rank with the Italians in numerical importance. They have tended to settle in the towns, where they are found in the skilled trades and in all kinds of business. Some of the strongest houses in the country are Spanish, though these are now largely directed by the second generation. The Catalans maintain a separate organization in Asuncion distinct from the body of the Spanish colony. There is a marked prejudice in Paraguay against the ordinary class of Spanish immigrants as being a disturbing element in the labor situation.

The Paraguayan Government has never had occasion to frame a policy in regard to oriental immigration. However, the national immigration law expressly declares that the facilities offered to immigrants shall not be extended to "individuals of yellow or black race." It is understood that an influx of orientals would not be regarded favorably, although there are no formal restrictions on private colonization by Chinese or Japanese.

Those who come to Paraguay as agricultural colonists should have the qualities of the pioneer—steadiness, determination, robust health, and willingness to work. Otherwise they will succumb to the environment of the country instead of dominating it or return discouraged to the country whence they came. They should expect few pleasures or even comforts for a few years, and in some districts they may literally have to clear a farm out of the dense forest with ax and machete, as the German colonists have done at Hohenau. For settlers of this kind Paraguay offers a certain and comfortable independence.

PARAGUAY AS A FIELD FOR IMMIGRATION.

As a field for immigration Paraguay is at a serious disadvantage because of its position, for Brazil and Argentina drain off the current of immigration from Europe before it can reach the interior Republic. In the first place, there is the handicap of the added expense for the passage from Buenos Aires to Asuncion, for the Paraguayan Government has often lacked the funds to carry out its policy of providing transportation for immigrants from the River Plate. In this regard it is forced to compete with the greater resources of the Argentine Government for placing immigrants in places where there are opportunities for them. Moreover, in most parts of Argentina or in the coast States of Brazil the colonist is nearer his home in Europe, to which he can more easily return if he desires or from which he can bring out more of his family if he decides to settle permanently.

In Argentina he also finds better facilities for the transportation of his crops and a surer market for them. He finds a sounder monetary system and the assurance of more stable political conditions. His children have access to better schools than exist in the rural districts of Paraguay, and the people among whom he must live speak a European language instead of the Guarani of the Paraguayan masses. In fact, he finds generally more advanced conditions of life than he will encounter in Paraguay.

The natural advantages which Paraguay offers to counterbalance the superiority of Argentina in these respects—an exuberantly fertile soil in nearly all parts and a climate whose winters present few problems—are little known in Europe. Besides good farm and cattle lands can be bought at a much lower price in Paraguay than in Argentina, where land values are much inflated.

According to statistics of the Ministry of Foreign Affairs, during the period 1881 to 1907, 12,241 immigrants entered Paraguay. This number includes only immigrants whose passage from the River Plate was paid by the Paraguayan Government and who had registered in the Paraguayan consulates at Buenos Aires or Montevideo. It does not include immigrants who came to the country on their own account. Of the above number 3,360 were Italians, 2,083 Germans, 1,736 French, 1,542 Spaniards, 890 Argentinians, and 14 were Americans. For subsequent years the "official" immigration was as follows:

| | | | |
|------|-------|-------------------------|-------|
| 1908 | 1,024 | 1914 | 1,616 |
| 1909 | 830 | 1915 | 366 |
| 1910 | 578 | 1916 | 298 |
| 1911 | 446 | 1917 | 326 |
| 1912 | 704 | 1918 | 270 |
| 1913 | 1,512 | 1919 (first six months) | 115 |

The numbers of the principal nationalities among the immigrants during 1917 and 1918 were as follows: Germans, 94; Italians, 113; Spaniards, 112; Argentinians, 167.

POLICY OF THE GOVERNMENT.

The governmental authority over colonization and immigration is the Oficina de Tierras y Colonias, or Office of Lands and Colonies. This department of the Government is attached to the Ministry of

Foreign Relations and is presided over by a director general. The Immigrants' Hotel is under the administration of the colonial office. The national immigration service is ably and honestly directed, but its work is greatly limited by the small resources placed at its disposal.

In order to encourage immigration the national law of 1903 provides for the payment of second-class passage from Buenos Aires or Montevideo. In Asuncion the immigrant is lodged in the Immigrants' Hotel without cost to himself for a maximum of eight days, and at a very small cost per day in case he is forced to remain longer. The Government also pays the expenses of his transportation from Asuncion to the point where he is to settle.

In order to receive the benefit of these provisions the immigrant must first have made declaration before a Paraguayan consular office of the seriousness of his intentions to settle in Paraguay, for care is taken to weed out all but bona fide colonists. The applicant must also be in possession of money to the value of 50 gold pesos, if the head of a family, or 30 pesos if an adult son. The Government was for a time forced to suspend the provisions of this law because of lack of funds for the payment of immigrants' transportation, but has lately resumed its application.

During the period from October, 1917, to June, 1919, 473 immigrants were housed in the Immigrants' Hotel, and the total expenses of the hotel during that time amounted to 44,370 paper pesos, including the salary of the manager and a peon.

COLONIZATION.

According to the Paraguayan law of colonization there are two classes of colonies in which immigrants may settle—national and private. As sites for national colonies the Government sets off certain areas of the public, or "fiscal," lands, and divides them for distribution into "lots" and "half lots" of uniform size. In case a certain number of renters on land belonging to a private individual desire to become proprietors of the land which they are cultivating, and if the landlord refuses to sell the property to them, they can petition the Government to have the lands in question expropriated and converted into a national colony. In such cases assessors are appointed by the Government and the owner of the land to determine its value.

NATIONAL COLONIES.

The national colonies are in turn divided into two categories—agricultural and pastoral colonies. Land in the former is divided into lots of from 10 to 20 hectares, and the latter into tracts of 100 to 400 hectares. Mining lands are not subject to colonization and the Government can not alienate the title to such lands to any individual or company.

Both Paraguayans and foreigners are eligible as applicants for public lands. In its application to the former the law of colonization, as revised in 1918, has the character of a homestead law, and it is, in fact, known as the "Ley de Homestead." Under its provisions any bona fide farmer, who satisfies the other requirements of

the law, is entitled to register himself in the Oficina de Tierras y Colonias as an applicant for a lot of 20 hectares, if he is the head of a family, or for one of 10 hectares in the case of unmarried adults. For this land he pays up to a maximum of 200 paper pesos per hectare, depending on its location and the quality. This is equivalent, at the rate of exchange in force on October 7, 1919, to about \$4 United States gold per acre, or \$200 for a 20-hectare lot. This sum is payable in five yearly payments.

It requires five years to "prove up" on a claim. Within that time the colonist must have at least one-third of his farm in a good state of cultivation and fenced. He must also have erected a house and have planted 10 orange trees to each hectare of land. If the occupant has complied with these conditions by the end of that period, he is granted a definitive title to his holding. Meanwhile he is free from the payment of all taxes. Colonists who have all of their holdings under cultivation within two years after settling upon it are ceded another lot gratis within the colony.

CONDITIONS GOVERNING LAND GRANTS.

The conditions for a grant of pastoral land are that the applicant must place upon the land within 60 days after his application has been granted either 50 head of breeding cattle, 25 horses, or 100 sheep, and at the end of five years he must have six times that number of animals grazing on the property. During that time he is also required to build a house. For a tract of between 100 and 400 hectares, he is required to pay, in five annual installments, from 10,000 to 14,000 paper pesos, or between \$500 and \$700 United States gold. Public land suitable for grazing and not situated within the bounds of a colony can be rented from the Government as range for stock.

Each colony is administered by a "comisario," who represents the Oficina de Tierras y Colonias. He is required to see that the colonists comply with all the terms of their tenure, and in his capacity as justice of peace he acts as arbiter of disputes within the colony. Much of the success of the colony depends upon the efficiency and honesty of this official and the character of his relations with the colonists under his supervision.

When, in the opinion of the central Government, the numbers and prosperity of the colony justify the change, the President of the Republic is empowered to raise its status to that of "pueblo," or municipality. In that case it is administered henceforth according to the national law of municipalities and is subject to the superior control of the Ministry of the Interior. San Bernardino and Yegros are examples of colonies that have assumed the status of "pueblo."

Each colony must be provided with a public school, in which it is required that instruction in agriculture and the history of Paraguay be given. If the colony consists of foreigners, Spanish must be taught in the school, and Spanish is also the official language in all colonies. Each colony must organize a "guardia urbana" with the exclusive object of providing for the defense and maintenance of order within the colony."

PRIVATE COLONIES.

There are two classes of "colonies particulares," or private colonies. The first of these consists of colonies located on lands which

the Government has ceded to private individuals or companies for the express purpose of establishing colonies thereon. Cessions of this kind are not made by the Oficina de Tierras y Colonias, but require an act of Congress for their authorization. The second class of colonies consists of strictly private enterprises, where large landowners set apart some of their properties for purposes of colonization. Most of the colonies of this latter class are situated along the Alto Parana, in the zone above Encarnacion. Over colonies of the first class the central Government exercises a considerable amount of supervision and also extends to immigrants destined for these colonies much the same facilities that are offered to colonists who settle in the national colonies.

The Paraguayan Government was formerly very liberal in making grants for private colonizing schemes, but its experience with some of these undertakings has made it very cautious in the matter of such cessions. It now advises that colonizing "empresarios" or companies should buy the land required for the founding of colonies. The public domain is now much shrunken as a result of the excessive liberality of former administrations and the total extent of fiscal lands in eastern Paraguay can not exceed at present 200 square leagues (1,500 square miles). The largest areas of such lands are located in the Department of San Pedro.

Little public land remains in the Chaco, except in the debatable zone in the northern part. In the present status of the boundary dispute with Bolivia settlement in this region is highly inadvisable. An American citizen who secured from the Bolivian Government a concession for a large tract of land a short distance above Bahia Negra found his title invalidated by the Paraguayan Government, whose forces occupy the site of Bahia Negra. The Paraguayan Government refused to grant a similar concession covering the land in question, but has expressed its willingness to consider the petitioner's request for a lease of 20,000 hectares of land within the area included by his unrecognized Bolivian grant.

Few of the private colonies in Paraguay have been successful. The failure or the slow progress of most of them have been due to a number of causes. Sometimes, as in the case of Nueva Germania, they have been situated too far from a practicable transportation route, so that the colonists have found themselves without an outlet for their products. A bad site was chosen for some, as in the case of Sebastian Gaboto, which is subject to periodical inundations. In others there were serious disputes among the colonists, as at Nueva Australia, or exploitation of the colonists by the "empresario." At Trinacria a considerable proportion of the colonists lacked the qualities to succeed under any circumstances.

The price of land and other conditions of settlement vary greatly on the private colonies. This class of colonies has declined in relative importance as compared with the national colonies and with the true type of private colony, such as those of Barthe or Herrera Vegas.

LIST OF NATIONAL COLONIES.

Monte Sociedad.—Located about Villa Hayes, in the Chaco, a short distance from Asuncion; total area, 3,207 hectares, of which about half is occupied. The raising of sugar cane is the principal industry.

Founded in 1859, this colony is in Paraguay and the only one in the Chaco.

General Aquino.—Formerly the colony of Trinacria; situated 8 leagues (about 20 miles) from Villa Rosario, in the Departments of Villa del Rosario and Curubi del Rosario. The grant of over 16 square leagues (115 square miles) included in the original colony was made to the Sociedad Colonizadora Italo-American in 1898. The first settlers were mostly Sicilians. They found the lots assigned to them unsurveyed and the country without communications or accessible markets. For these and other reasons, the colony soon failed and the land was taken over by the State, which converted it into a national colony.

The South American Lumber Co., an American enterprise, obtained a concession of 22,500 hectares in the same region in 1907 for the purposes of colonization, but failed for the same reasons as the Italian colony.

Sebastian Gaboto.—Formerly the Colonia Aceval and later Esperanza; located in the Department of Villafranca; founded in 1892. The site was ill chosen and the concessionaires did not carry out their contract with the Government, which has taken over the grant.

25 de Noviembre.—Located in the Department of Ajos, near the colony of Nueva Australia; founded in 1893; area, 9,667 hectares, in 485 lots.

Nueva Italia.—Located in the Department of Villeta, about 50 kilometers south of Asuncion; consists of 14,848 hectares. All the lots have been taken up, but land in the colony can now be bought for between 500 and 1,500 gold pesos per lot of 16 hectares (\$12.20 to \$36.60 per acre). This colony was founded in 1906 and is one of the most prosperous of the national colonies. Most of the foreign colonists are Germans and Italians.

Jose Berges, Hernandarias, and Fernando Delamora.—These three colonies are the result of the subdivision of what was formerly the single colony of Agaguigo. They are located in the Concepcion district, in the Departments of Horqueta, Loreta, and Belen, respectively. They consist of lands which were expropriated by the Government in 1903. Their total area is about 15,000 hectares.

Coronel Bogado.—Located along the railway in the Partido of Coronel Bogado and near the station of Caipuente. It consists of 3,635 hectares.

14 de Mayo.—Located in the Department of Villa Rica. This is a promising colony, consisting of 3,221 hectares, divided into 225 lots.

Other national colonies.—Natalicio Talavera, Department of Borja; Nueva Colombia, Department of Altos; Coronel Thompson, Department of the Ipane; General Delgado, Department of Santiago de Misiones; General Jenes, Department of Pedro Juan Caballero; Mauricio José Troche, Department of Mbocayaty.

PRIVATE COLONIES ON GOVERNMENT GRANTS TO INDIVIDUALS.

Hohenau.—Located about 55 kilometers above Encarnacion, on the Alto Parana; founded in 1898 by Reverchon and Closs; now under management of Estevan Schöller. The area of the colony is 80 square kilometers—20 kilometers deep, with a river frontage of 4 kilometers. The lots, which are 200 meters wide by 2,000 meters deep,

lie on both sides of the road, which extends the length of the colony. All the land in the colony has been taken up. The road, which extends inland from the port to the colony of Jesus, is probably the best in Paraguay. It would be a feasible road for automobile traffic, and some of the colonists have planned a motor stage line to operate over it. The steamers which ply between Posadas and Porto Mendes call at the port of the colony, and a launch, drawing a cargo lighter, runs three times a week between Puerto Hohenau and Encarnacion. The colonists are largely engaged in agriculture—the raising of maize, rice, sugar cane, tobacco, oranges, bananas, and vegetables, and the artificial cultivation of yerba. There are several small industries, including sawmills, a saddlery, and five distilleries.

The colony contains about 1,500 inhabitants, of whom 815 are German speaking and the remainder mostly Paraguayans. Of the German element, 479 are classed as German-Brazilians. These immigrants from southern Brazil, who had passed through the hard school of the pioneer in Rio Grande do Sul and Parana, form the backbone of the colony. They are unusually hardy and industrious lot and have made the colony the best in the entire Republic. The farms, which have been cleared from the virgin forest, are well cultivated. The colonists live in neat frame houses, with well-kept yards and gardens, and the colony in general presents an appearance of well-being and comfort. The colonists have carefully conserved their German traditions and speech. They maintain two schools, in which little attention was paid to the teaching of Spanish until the Paraguayan authorities insisted on instruction being given in that language. There are also a singing society and a schützen club.

The ordinary affairs of the colony are administered by the council, which is elected by the colonists. The colony is in the jurisdiction of the jefe político of the Department of Jesus y Trinidad.

Nueva Germania.—Located in the Department of Villa San Pedro, on the Aguaray-guazu River, and about 80 kilometers from the port of Antequera, on the River Paraguay. The colony was founded in 1887 by Dr. Forster, of Berlin, and most of the early colonists were Prussians. They were ill fitted to succeed under the conditions which they found, and their attempts at agriculture failed partly because of frosts which killed the coffee trees and partly because of the lack of good communications. After passing through difficult times the colony now shows signs of prospering, largely due to the initiation of yerba culture on a considerable scale.

Antequera y Rosario Lomas.—Antequera lies on the Paraguay River about 150 kilometers above Asuncion, and Rosario Lomas lies from 12 to 24 kilometers inland, on the River Jejuy. The town of Villa San Pedro is between the two parts. The total area of the double colony is about 12 square leagues (86 square miles), divided into lots of 20 to 100 hectares. These are sold at the rate of 5 or 6 gold pesos per hectare (\$2 to \$2.35 per acre). The colonists are mainly devoted to general agriculture, yerba cultivation, and lumbering.

Nueva Australia.—Located in the Department of Ajos, northeast of Villa Rica and about 52 miles from the Caballero station of the Central Paraguay Railway. This colony was founded in 1893 by the Australian Cooperative Society. The Paraguayan Government granted to the society over 61 square leagues (440 square miles) of

land, on which it was to settle within six years a minimum of 1,200 families or a total of at least 4,000 persons. The nucleus of the colony consisted of Australians, under the leadership of William Lane, a man of strong personality and advanced socialistic ideas. A strictly socialistic régime was established, with division of the proceeds of the colonists' labor, woman suffrage, etc. However, dissensions early arose between Lane and some members of the colony, while some of the more independent minded of the colonists revolted at the restrictions imposed upon their activities as individuals.

As a result of these internal contentions the colony disintegrated before the expiration of the six-year period needed to confirm the society's title to the grant of land. During this time only a few hundred colonists had arrived, mostly Australians, British, Irish, and Americans. Lane, in company with 65 seceders, who supported him, withdrew from Nueva Australia and founded the colony of Cosme. After this schism the colonists who remained petitioned the Government to sanction the liquidation of the society and the division of the land actually occupied among the individual members. It was proposed that each colonist should receive 60 square cuadras, or about 45 hectares, and that 6 square leagues be reserved for communal use and for occupancy by any later arrivals. The proposals of the colonists were accepted by the Government in 1897. For many years the colony was in a state of decline and in 1910 counted only 150 foreign residents. Lately its population has increased and the colony has shown marked signs of progress.

Cosme.—This colony, founded by the seceders from Nueva Australia, is located on the River Pirapo, in the Department of Caazapá. A liberal grant by the Government in 1897 left the colony in possession of 7 square leagues (50 square miles) of land. Lane's attempt to transplant his socialistic scheme to the new colony ended in failure, and he himself returned to Australia. The colony is now in a complete state of decadence. Its socialistic basis was abandoned many years ago.

Elisa.—Located near San Antonio, a few miles south of Asuncion. The colony was founded by the old Banco del Paraguay y Rio de la Plata, which later sold its rights to Emilio Johannsen, the present concessionnaire. The colonists, who are mostly Swedes, are engaged in agriculture and are making extensive experiments in cotton cultivation. The colony is one of the most prosperous in Paraguay.

Mayntzhuysen.—Situated about 100 kilometers above Encarnacion, with a port on the Alto Parana at Yaguarazapa. The territory included in this colony, amounting to 5,625 hectares, was granted to Friedrich C. Mayntzhuysen, a German, under the provisions of the law of September 7, 1909, entitled "A law for the reduction of native tribes." According to the terms of the grant as made under this law the concessionaire bound himself not only to introduce white settlers on the land but to labor for the civilizing of the Indians who inhabit the forest regions in which the colony is situated. These Indians consist of the quite pacific Cainguaes and of the more intractable Guayaquies. Efforts have been begun toward reducing the former to a sedentary and civilized way of life, but no attempt has yet been made to deal with the wilder Guayaquies. The colony contains only about 150 persons, nearly all Germans, but the concessionaire, who recently returned from the European war,

anticipates a considerable influx of immigrants. Land in the colony sells for 180 gold pesos per 30 hectares (about \$2.35 per acre). Half of this sum may be paid at the time of taking up the lot and the remainder in two years.

In 1909, by the provisions of the same law under which Mayntz-huysen holds his grant, 7,500 hectares of land in the Department of Caaguazu were ceded to Father Franz Müller, of the Congregation of the Divine Word. The efforts of Father Müller and his associates constitute a purely missionary enterprise, without any thought of colonization. These German priests have established themselves in the forest region near the Monday River, where they are working to convert the wild Indians from their vagrant habits to a civilized mode of existence based on settled agriculture. Their program in this regard is similar to the aims of the Anglican mission, which is situated in the interior of the Chaco, to the west of Concepcion.

San Bernardino.—This town, which is situated on the north shore of Lake Ipacarai, a short distance from Asuncion, was formerly a colony, but has now the status of a municipality, or "pueblo." It was founded in 1883 by colonists who immigrated direct from Germany. The colony was unfortunate in the poor quality of the soil and in the fact that the railway is on the opposite side of the lake, but a spur of the railway has been run down to the lake, across which connections are maintained with the town by means of launches. Most of the inhabitants are engaged in dairying or other industries on a small scale, but the main interest of the town now lies in its popularity as a winter resort for tourists from the River Plate cities. The place has very good hotel accommodations and is equipped with electric lights.

PRIVATE COLONIES ON PRIVATE LANDS.

Colonia Barthe (San Lorenzo).—Situated about 180 kilometers above Encarnacion on the lands of the Domingo Barthe Co., and about 6 kilometers inland from the port on the Alto Parana. The total extent of the colony is 3,750 hectares, of which only 30 lots of 30 hectares each have been taken up. The price is 6 gold pesos per hectare (about \$2.35 per acre).

Colonies of R. and M. Herrera Vegas.—Of 93,750 hectares held by these two Argentinians in the "Zona Grande" of the Alto Parana, 78,750 hectares have been reserved for purposes of colonization. Of this amount about 8,000 hectares have been taken up by colonists. There are five separate colonies, and prices of land range from 13.20 gold pesos per hectare (\$5.15 per acre) in that of Jesus to 22 pesos (\$8.60 per acre) in that of Ricardo Lavalle. The names and location of the five colonies are as follows:

(1) *Herrera Vegas (Puerto Cantera)*: Situated about 30 kilometers above Encarnacion. This is a promising colony, with a fine outlet on the river.

(2) *Ricardo Lavalle*: Has no water front, but is connected by road with the river and also Encarnacion.

(3) *Caracas*: Located in the heart of the Herrera Vegas territories.

(4) *Jesus*: Is conterminous with the northern limits of the colony of Hohenau; has outlets by road to Puerto Hohenau, Puerto Cantera,

and Encarnacion; located on the site of one of the old Jesuit "reductions."

(5) Palacios: Located on the river near Campichuelo.

Pastor Obligado.—Located on the Alto Parana near Hohenau, settled chiefly by Germans and German-Brazilians. Price of land, 11 to 14 pesos per hectare (\$4.30 to \$5.45 per acre).

Guillermo Tell.—Located on the Alto Parana a short distance below the mouth of the Monday. It was founded by Dr. Moises Bertoni in 1899 and is devoted mainly to agricultural experimentation on a large and scientific scale.

LANDS.

For those who desire to purchase from individuals, land in any section of Paraguay and in any quantities can generally be obtained. Prices for land vary greatly, depending on situation and accessibility, state of improvements, etc. However, there is a strong tendency to a rise in prices, particularly for grazing lands, due to the impetus given to cattle raising by the frigorificos. It may be said that prices of land suitable for agriculture or stock raising range between 5,000 and 35,000 gold pesos per square league (\$1.05 to \$7.30 per acre). In large transactions, involving the sale of several square leagues, prices are usually quoted in Argentine gold pesos. In smaller deals, where the quantity of land is expressed in hectares, the transfer is made on the basis of the national currency, or the paper pesos. Sometimes sales are registered in Argentine paper pesos.

PRICES OF LAND.

As there is great fluctuation in the relation between the Paraguayan peso and the Argentine monetary units, the equivalents of land values, when expressed in the former medium, can be given only approximately in American currency. Among land sales entered on the public register in Asuncion during the week ending October 11, 1919, were the following:

| Departments. | Hectares. | Price in paper pesos. | Equivalent in dollars per acre. |
|------------------|-----------|-----------------------------|---------------------------------------|
| Villeta..... | 62 | 25,000 | \$8.58 |
| Do..... | 40 | 5,000 | 1.60 |
| Luque..... | 750 | 240,000 | 6.32 |
| San Lorenzo..... | 6 | 3,800 | 13.32 |
| Desmochados..... | 1,301 | 60,000 | .94 |

The Departments of Luque and San Lorenzo del Campo Grande lie in the neighborhood of Asuncion, and those of Villeta and Desmochados lie below Asuncion on the river. During the same week there was announced the sale of 60 square leagues in the Department of Villa San Pedro to an American company for the sum of 900,000 gold pesos, or at the rate of 15,000 pesos per league (\$3.12 per acre). Thirty thousand gold pesos has recently been offered for land in the Misiones district. Land values in the Chaco have risen

greatly since the period when Carlos Casado secured 3,000 square leagues at the rate of 100 gold pesos per square league. Lands in that region can now be bought for prices ranging from 5,000 to 12,000 gold pesos per league (\$1.05 to \$2.50 per acre). The first price is for lands situated in the interior. Prospective buyers of Paraguayan lands can count on being able to obtain grazing lands for between \$2 and \$5 gold per acre, and agricultural lands for between \$5 and \$20, although in the colonies land can be procured at even lower prices.

TITLES TO LAND.

Purchasers of lands must exercise great precaution in the matter of titles, particularly in eastern Paraguay. There is no cadastral survey covering the Republic, and many of the private surveys made are unsatisfactory. There are many overlapping and conflicting titles, due to the existence of at least three series of land grants. In the first place are the titles which date from colonial times; in the second place are the titles of the Lopez period; and, finally, there are the titles derived from grants and transfers made since the reestablishment of constitutional government after 1870. Though proper surveys are lacking in the Chaco, titles in that area are otherwise clearer, as the grants made there all date from comparatively recent times. Anyone contemplating the purchase of land in Paraguay should consult a responsible Asuncion lawyer regarding the validity of the title before consummating the deal. Much of the business of the Paraguayan courts is concerned with questions of land titles.

The Banco Agricola and the Oficina de Tierras y Colonias are always willing to give information gratis to persons who desire to buy land in Paraguay. Almost daily auctions of lands are held in a certain café in Asuncion. Full details of these properties are published beforehand in the leading daily newspapers by the agents in charge of the sale.

FOREIGN TRADE.

THE PARAGUAYAN MARKET.

The 800,000 to 900,000 people of Paraguay probably represent the buying capacity of an American city of about 150,000 inhabitants. Though this is a small factor in the general international market for exported goods, the potential development of the country makes it a field worth cultivating. Not only is Paraguay greatly underpopulated, but increased production by its present population is necessary to the expansion of the Paraguayan market for manufactured goods. At present the general standard of living is low. A disproportionate part of the demand for foreign merchandise centers in the capital, where standards of living are relatively high. From Asuncion living standards range down through the larger towns to the small villages and country districts of the interior, where life is of elemental simplicity and as near an approach as possible is made to self-sufficiency. The 50,000 or 75,000 Indians of the Chaco can be left out of consideration altogether. The most widespread demand is for cotton textiles and hardware.

The standard of living in Paraguay is clearly rising, especially among the town population. In Asuncion this advance has been remarkable since the end of the war, and a higher class of goods is being sold than ever before. This is especially noticeable in such lines as clothing, jewelry, prepared foodstuffs such as canned goods and preserves, electrical goods, and tools. The purchase of strictly nonessentials and luxuries has been so marked that native partisans of the old-fashioned simplicity of a few years ago are already lamenting what they call the new "orgy of display and extravagance."

One of the potent factors in this tendency has been the three American "frigorificos," or meat-packing plants, whose large expenditures for wages and cattle have greatly increased the buying capacity of both workmen and farmers and have affected the community at large. Those who benefit from the money which the frigorificos have brought into the country dress better and generally live better and more comfortably than before. Among the lower class of the country the first evidence of a higher standard of living is generally the wearing of shoes—the passing from the class of "descalzos" to that of "calzados." A change is quickly manifested in other lines. The part of the population least affected so far is that of the purely farming sections of the Republic, including the towns dependent on agriculture.

BUSINESS INTERESTS AND METHODS.

Most of the stronger Paraguayan houses are owned either by foreigners or by the second generation of families settled in the country since the War of Paraguay (1866-1870). Among the nationalities represented firms of Spanish and Italian origin predominate.

There are also several important French and German houses. Other things being equal, these merchants will naturally patronize exporters in the countries whence they came, though in this question it would be easy to exaggerate the importance of nationalistic sentiments. The Levantines, who are referred to throughout South America as "Turks," but are in fact mostly Syrians, are an increasingly important factor in mercantile business in Paraguay. They are found everywhere, working as peddlers, conducting small bazaars, where they sell dry goods and notions, or operating stores on a larger scale. The "Turkish" colony recently formed a society, called the Union Siria, for the promotion of its common interests. There is only one American mercantile house in Asuncion and one English house.

Business customs in Paraguay are much the same as prevail in other parts of South America, and Paraguayan importers must be dealt with accordingly. Though rather slow to give their confidence to a new firm seeking their business, once their confidence is gained they are as slow to withdraw their patronage. They are very punctilious in insisting on exact compliance with the terms of an order. A deviation in this respect not only ends the exporting firm's chance of obtaining further business, but is so widely advertised that it is made to reflect on the business ethics of the whole nation to which the shipper belongs.

No American house that has any desire to gain a permanent place in the Paraguayan field or that has any regard for the standing of American business in that market should alter the terms of an order, unless after a previous understanding with the consignee as to the exact substitution to be made. This applies to class of goods, prices, and terms of credit. The effect of the conduct of a few irresponsible shippers is illustrated by the following statement in the Asuncion Revista del Comercio in October, 1918: "From the frequent occurrence of consignments not shipped according to orders, it will be understood that commercial relations with the United States are not satisfactory to the local market, and, far from tending to increase in the future, they will tend to disappear as soon as possible."

BUSINESS ORGANIZATIONS.

The principal business interests of the country are organized in a chamber of commerce, or Cámara de Comercio, which is housed in one of the most attractive buildings of the capital. The secretary of the cámara and editor of its bimonthly organ, the Revista del Comercio, is Señor José Rodríguez Alcalá.

The largest of the Paraguayan houses are both exporters and importers. They export such products of the country as hides, tobacco, and petitgrain, using the credits thus obtained for settling their accounts for imported merchandise. Many have their own lands, where they raise cattle. An example of this is the firm of Rius & Jorba. Not only is it the strongest general mercantile firm in Paraguay, but it is also the largest exporter of hides and tobacco, exporting probably half the tobacco of the country. The land and cattle company known as La Rural Española is a subsidiary of this firm. It is also intimately connected with the important Banco de la Repùblica. The members of the firm are of Catalan origin and

a large part of its purchases are made through its buying representatives in Barcelona. It carries several standard American lines in its Asuncion store and in its branches in Villa Rica, Encarnacion, and other towns.

The most important general commercial companies in Paraguay are given in the following table:

| Name of company. | Capital paid up. | |
|--|------------------|--------------|
| | Gold pesos. | Paper pesos. |
| Rius & Jorba..... | 2,000,000 | |
| Urrutia, Ugarte & Cia..... | 200,000 | |
| Sebastian Brun & Cia..... | 250,000 | |
| Federico Krauch & Cia..... | 120,000 | |
| Perez & Sanjurjo..... | 250,000 | |
| Giménez Hermanos..... | | 3,600,000 |
| Censi & Pirotta..... | 100,000 | |
| Alfredo Minner..... | 150,000 | |
| Lapiere & Cia..... | 50,000 | |
| Hijos de Jorge Casaccia..... | 50,000 | |
| Gomez & Cia..... | 300,000 | 1,600,000 |
| Gaudino, Salsa & Cia..... | 130,000 | |
| Angulo & Cia..... | | |
| Jorge Casaccia..... | 400,000 | |
| B. Quevedo & Cia. (Concepcion)..... | | |
| Guggiari Hermanos (Villa Rica)..... | | |
| A. Perasso & Cia. (Encarnacion)..... | | |
| Domingo Barthe & Cia. (Encarnacion)..... | | |

CONDITIONS IN RETAIL TRADE.

Few of the buildings occupied by these firms give an idea of the amount of business carried on within. The largest department store in the country is housed in a dingy, barnlike structure. The best appearing stores of Asuncion are drug stores. There are also two new up-to-date grocery stores, two or three first-class shoe stores, and as many haberdashery stores. One jewelry store with a high-grade stock of goods and a select clientele is kept in a private house and bears no sign on the outside indicating the nature of its business. There is a decided tendency to the improvement of the appearance of business houses and to the more attractive presentation of goods. Profits have been so high in mercantile business that merchants have felt little incentive to attract trade by advertising or other means. Shelves and show cases are better arranged than formerly, and window display decoration is being employed to an increasing extent.

The newspaper advertisements of local stores are little more than enlarged business cards. Street-car signs, lettered in red and black, are used, but as they are not illustrated they have a limited appeal. The same is true of the advertisements thrown on the screen between pictures at the motion-picture theaters. As there are few people on the streets after dark in Asuncion, electric display advertising would be ineffective. The custom of pulling down the sliding metal shutters when closing the store for the day also limits the usefulness of show windows to business hours.

Merchandise is distributed to the country mainly from Asuncion. A few of the more prominent houses in the towns of the second class,

such as Quevedo, of Concepcion, Guggiari, of Villa Rica, and Barthe and Perasso, of Encarnacion, import a certain amount of goods directly from abroad, but most of the imported merchandise used outside the capital is distributed by the large Asuncion houses. In some cases they operate through branch stores, or through independent local merchants whom they supply with goods and who act as their agents for the purchase of tobacco and other produce for exportation. Some of them send out salesmen once or twice a year to cover the local trade of the country, and one or two houses canvass the lower part of Matto Grosso. The larger industrial concerns, such as the American meat-packing companies, the quebracho companies, the yerba company (*La Industrial Paraguaya*), and the sugar company (*La Azucarera Paraguaya*) have their own stores at their plants and buy through regular purchasing gents. The store operated by the International Products Co. at Puerto Pinasco has a monthly turnover of about \$80,000.

MEANS OF REACHING PARAGUAYAN TRADE.

Paraguayan importers buy either direct from Europe or the United States, or through Buenos Aires or Montevideo. The natural preference of the larger importers in ordinary times is to deal as directly as possible with the original exporter. The cost of goods ordered in this way is considerably less than when ordered from Buenos Aires or Montevideo, the saving amounting to the Argentine import duty plus the profit of the Buenos Aires dealer plus the costs of reshipment at that point.

A few Asuncion houses have regular buying representatives in Europe, who attend to most of their purchases. In two or three cases Asuncion stores are branches of European houses. Some Paraguayan importers have long-established connections with European manufacturers, and these relations, particularly with the English textile houses, have generally proven so satisfactory that it is difficult for outside competitors to make any impression on them. The custom among many American manufacturers of accepting only a certain minimum order forces the majority of Paraguayan importers, whose individual orders are relatively small, to deal with jobbers instead of directly with the manufacturers, as they generally prefer to do.

CATALOGUES AND CORRESPONDENCE.

As a means of getting Paraguayan trade, catalogues are of little use unless in Spanish. If in English they are likely to be thrown into the wastebasket without being examined. Some of the catalogues sent to Asuncion by American firms have been highly satisfactory and have brought good results to the companies that published them. However, catalogues should not be sent at random to Asuncion importers, unless the company which sends them is ready to fill orders in accordance with prices and other specifications contained in them. Some very reliable houses have complained that, after receiving attractive catalogues from the United States, the American exporters did not appear disposed to do business with them.

As a rule, correspondence should be in Spanish. The number of houses to which letters can be sent in English is growing, due to the increased interest in that language in Paraguay, but with the majority correspondence in Spanish is advisable. It is better, however, to send correspondence in good English than in bad Spanish. As for the style in which business letters should be written to Spanish Americans, the ordinary rules of courteous intercourse are a sufficient guide. The South American is no more impressed by a needlessly long-drawn-out business letter than is a North American, and he is just as much on his guard against overstatements.

ADVERTISING MEDIUMS.

There are several mediums for reaching the Paraguayan market through advertising. The three most important local newspapers—El Diario, La Tribuna, and El Liberal—reach most of the reading population. La Nación and La Prensa of Buenos Aires also have a considerable circulation in Asuncion. Local weekly and monthly periodicals are of little value as advertising mediums. Among Argentine weeklies regularly sold in Asuncion are Caras y Caretas, El Mundo Argentino, El Hogar, Fray Mocho, and Atlantida, and among Uruguayan is El Mundo Uruguayo, of Montevideo. The South American edition of The World's Work, published by La Nación, of Buenos Aires, as La Revista del Mundo, is finding a wide sale in Asuncion and forms an excellent publicity medium for American products. Spanish editions of three American women's magazines—Vogue, Pictorial Review, and The Delineator (El Espejo de la Moda)—are also sold in Asuncion.

Attractive posters and display cards, when illustrated and highly colored, make good advertising material and when sent with consignments of goods help the local merchant in putting such goods before the attention of the trade. The wording of this class of display matter should be in Spanish.

COMMERCIAL TRAVELERS.

Comparatively few representatives of American houses ever visit Paraguay. The fact that the Republic lies off the beaten track of South American travel usually causes it to be avoided by salesmen from the United States who are making the circuit of the continent. A side trip to Asuncion from Buenos Aires means a deviation of 2,000 miles from a salesman's itinerary. Such a trip requires about 10 days' time at least, and entails a cost of about \$100 fare for the round trip, besides hotel expenses, which will run about \$6 to \$8 a day. But, for these selling standard lines, such as hardware, a visit to Asuncion should repay the extra expenditure of time and money.

The tax on commercial travelers is a municipal impost and a new license must be taken out in each town visited. The fee not only depends on the requirements of the particular town, but on the importance of the firm which the salesmen represents. It varies from about \$30 to \$45 for the few larger towns. A license is valid for six months. In practice the payment of the license fee is seldom required.

When samples having a commercial value are brought into the country a deposit to cover customs duties must be made as a guar-

anty that they will be reexported, which must be done through the original port of entry.*

COMMISSION AGENTS.

There are a number of "comisionistas," or commission agents, in Asuncion, through whom a considerable share of the importing of the country is done. Some of them carry a stock of goods from which they sell to local dealers, but the majority act only as intermediary between the foreign exporter and the local importer, handling the orders for a commission. In some cases they act as exclusive representatives for exporting firms in Europe or the United States. Among the leading commission men are the following: Paraguay Sales Co., Alberto Grillon y Hijos, Augusto Bisso, William Paats, and Lorenzo Manzoni, in Asuncion, and Peluffo y Otaño in Concepcion.

The Paraguay Sales Co. is an American firm and is incorporated under Paraguayan law as a limited liability company. It was organized in January, 1919, by persons connected with the International Products Co., though as an entirely independent concern. It was originally capitalized at \$500,000 paper pesos. The general manager in Asuncion is B. J. Pope, and the post-office address of the company is Casilla Correo 364. The company is the regular Paraguayan agent of several American manufacturers. Besides its general commission business it acts as customs broker and as insurance and shipping agent.

SALES THROUGH BUENOS AIRES OR MONTEVIDEO.

The second method of reaching the Paraguayan trade is through a branch or through general wholesalers or jobbers in Buenos Aires or Montevideo. A large portion of the heavy importations from Argentina into Paraguay really represent the reexportation of foreign-made goods from Buenos Aires to Asuncion. Paraguay is included in the territory of many Buenos Aires branches of American manufacturing firms, so that, when Paraguayan importers order goods from the home office in the United States, they are often referred back to the Buenos Aires or Montevideo branch.

It must be remembered that when an Asuncion importer is obliged to order from a stock in Buenos Aires the reexportation of such goods to Paraguay forces the importer to pay the Argentine, in addition to the Paraguayan, import duty. The Director of the Paraguayan Statistical Office estimates that these Argentine duties on reexports to Paraguay amount to over 800,000 gold pesos a year.

For the exporter there are advantages in covering the Paraguayan field through his Buenos Aires branch, especially if his Argentine representative gives the proper attention to the Paraguayan trade. This, however, the latter frequently does not do, because the possibilities of the Paraguayan market are dwarfed in his view by the greater magnitude of the market immediately about him.

In case Paraguay forms part of the territory of the Buenos Aires branch of an American exporting house, the head of the branch house

* Additional information for salesmen who may visit Paraguay will be found in the "Commercial Travelers' Guide to Latin America," issued by the Bureau of Foreign and Domestic Commerce as Miscellaneous Series No. 89. It is sold by the Superintendent of Documents, Government Printing Office, and by the district offices of the Bureau for \$1.25.

should visit Paraguay at least once a year, unless he has other means of securing a satisfactory return from the Paraguayan trade. On the upriver trip he can stop at Santa Fe and Parana and at Corrientes, and, if he returns by rail, at Posadas, to obtain whatever business these towns may offer in his line.

In making their purchases through Buenos Aires or Montevideo, Paraguayan importers buy through direct correspondence with the River Plate wholesalers, or they place their orders with traveling salesmen representing these houses, or they go to Buenos Aires in person and make their purchases on the ground.

One of the advantages of ordering goods through Buenos Aires is the short time required between sending in the order and receiving the goods. This amounts to the difference between one to three weeks for shipments from the River Plate and two months to a year for shipments from Europe or the United States. If desired, the buyer can also see his goods before buying, either by making a trip to Buenos Aires or by examination of the samples brought in by salesmen from the Argentine houses.

The ease of financing any business operations with Argentina is another factor in favor of buying from Buenos Aires. There are very intimate banking connections between the two countries and an unusual exchange relation prevails between Argentine and Paraguayan money. There is also the added assurance that correspondence will be handled in Spanish.

In the case of small orders of goods, which are still the rule in Paraguayan business, Asuncion merchants find it much more convenient to buy from stock in Buenos Aires than from the original exporting houses. In this way they can keep their stock replenished to meet the needs of their business, without being obliged to keep a large part of their capital tied up in reserves of merchandise. On the other hand, they are saved the risk of being left without needed goods by overdelayed shipments from Europe or the United States.

Conditions during the war gave a great impulse to the custom of buying from Buenos Aires. When European manufacturers were no longer able to fill orders as before, recourse was had to stocks accumulated in the River Plate ports. This channel also offered the line of least resistance to Paraguayan firms which were interested in evading the enemy trading list. The tendency since the end of the war, particularly where it is a question of large orders, is to go back to the custom of ordering directly from the manufacturer. However, the facilities offered by the River Plate wholesalers are so great that, in spite of the large extra charge which it represents to the buyers, a very considerable share of the Paraguayan demand for manufactured goods must continue to be supplied from Buenos Aires.

TRADE-MARKS.

The Paraguayan regulations in regard to the registry of trademarks require from the petitioner one of the following proofs of his ownership of the mark in question: (1) Presentation of certificate of registration issued by the proper authorities, or a legalized copy of the same; (2) presentation of a certificate issued by the consulate of the nation of which the petitioner is a citizen, showing that he is

the owner of the mark; (3) by any other means satisfactory to the Internal-Revenue Office (Oficina de Impuestos Internos).

Registration is valid for 10 years. The fee for registration is 20 gold pesos. The law requires that the application for registration be accompanied by two copies of the mark, description in duplicate of the mark and articles to be marked, receipt showing payment of fees, and a power of attorney if the application is not made in person. An electrotype for publication in the local papers should also be inclosed.

DIRECTIONS FOR SHIPPING TO PARAGUAY.

ROUTING.

The routing of goods to Paraguay is governed by the fact that it is an inland country without direct steamship connections with the United States or Europe. All goods must be transshipped to special river steamers or to the railway at Buenos Aires or Montevideo. At the former port transshipment is generally made to the boats of the Mihanovich Co. or of the Domingo Barthe Co., and at the latter to those of the Brazilian line of the Companhia Minas e Viacão de Matto Grosso. Purely transit shipments of this character do not pay import duties in the River Plate ports and are, moreover, allowed free storage privileges for a few days in the Government warehouses.

Both the Uruguayan Government and the above-mentioned Brazilian company show a disposition to facilitate as far as possible the passage of goods destined for reshipment to Paraguay. The attitude of the Uruguayans not only represents a phase of the efforts at a closer rapprochement between the two Republics, but is a move to strengthen the commercial relations between them. The proposed creation of a special deposit at Montevideo for goods in transit to and from Paraguay would be of special advantage to Paraguayan trade with the outside world.

Under existing arrangements shipments from Europe or the United States to Paraguay are consigned to the charge of one of the transportation companies named above, or sometimes to regular forwarding agents in the River Plate ports. The freight is paid by the shipper as far as the point of transshipment. Copies of the documents must be sent to the transshipping company, which is generally designated in the original order from the Paraguayan importer. The payment of the freight charges between the River Plate and Asuncion is handled by the ultimate consignee. It is possible to pay the freight to the final point of destination when the shipper is acquainted with the schedule of river freights. However, the latter are liable to sudden changes and such c. i. f. shipments to Asuncion are rare.

A parcel-post arrangement between the United States and Paraguay was put into effect in May, 1919. Packages sent in this way pay a tax of 0.30 gold peso each to the Argentine Government for the cost of transfer at Buenos Aires. Largely as a result of delays in forwarding at this point, the service has not yet worked smoothly. In November, 1919, over 270 packages arrived at Asuncion from the United States, many of which had been over four months on the way.

MARKING.

Goods destined for Paraguay should be marked, preferably stenciled, as follows:

(Initials or other distinguishing mark of consignee:)
Buenos Aires (or Montevideo),
En Transito para
Asuncion, Paraguay.

Directions such as "This side up," "Handle with care," "Don't use hooks," or "Keep away from boilers," should be in Spanish or in Spanish and English, for whatever effect such directions may have on crews and stevedores is limited to the latter's ability to read them and their regard for them when read.

PACKING.

Goods must naturally be packed with greater care for transportation to Paraguay than if their final destination were Buenos Aires or Montevideo. The circumstances to be taken into consideration in deciding the quality of packing for Paraguayan shipments are the fact of transshipment in the River Plate, the probability of rough handling on the river steamers, the inadequate means of unloading at Asuncion, sometimes by lighters, and carriage in carts from the customhouse at Asuncion to the place of storage.

For goods bound upriver above Asuncion there is the additional transfer at Asuncion to the Alto Paraguay steamers, unless sent by the Brazilian boats, which carry freight from Montevideo as far as Corumba without breaking voyage. If goods are sent from Asuncion into the interior of the Republic in their original package, they are loaded into a railway car for reshipment, and may ultimately be distributed by mule trains or oxcarts over long distances.

Strong reinforcement of boxes with wooden strips and metal straps can not be too strongly insisted upon. The strain on a heavily laden box, when dropped on one corner, is especially great, and the writer has seen one large case split open all the way around by such a fall. The size of boxes should be kept within limits that will not try the temper of boat and wharf hands, for the temptation to mishandle a large and unwieldy case is much greater than with a smaller and more manageable one. It is also necessary to use the lightest form of packing consistent with strength, as the import duty is generally levied on the gross weight of the package. It is better to give more attention to the packing of a shipment and enter the cost outright in the bill of lading, as is the custom of some European exporters, than to run the risk of having boxes reach the consignee in a broken condition and probably with some of their contents taken out on the way.

An examination of cases in the Asuncion customhouse showed that most of the American packing compared very favorably with that of European shippers. On the other hand, a few boxes gave the impression of having been packed for shipment into the next county instead of into the heart of South America, with the natural result that there was a certain proportion of damaged cases. Customhouse employees complained that much of the pine used in American packing was "muy quebradizo"; that is, very brittle and easily broken.

Machinery should be very strongly crated in order to protect it from friction in the hold of the ship on its long voyage to Paraguay. One large piece of American machinery was seen in the Asuncion customhouse with an abrasion about a third of an inch deep, which had been worn by the constant rubbing of another piece of metal while it lay in the hold between New York and Buenos Aires. As a result the damaged plate had to be removed and a new one welded in its place.

The main considerations in packing textiles for shipment is that the bales be weather and rat proof and not easily torn open when roughly handled. The English exporters who supply most of this line for Paraguay generally use a tight interior covering of tarred burlap. Their bales are usually well pressed and sewed and are protected with three or four metal straps. The Japanese bales are generally smaller and more easily handled, their dimensions running about $3\frac{1}{2}$ by $2\frac{1}{2}$ by 2 feet. They are wrapped with six or seven metal straps and reinforced lengthwise with strips of bamboo.

The fact that shipments to Paraguay pass through the Tropics on their way and that the climate of Paraguay itself is tropical for part of the year makes special care necessary in packing a certain kind of merchandise. The possibility of damage from humidity is high during certain seasons of the year, especially in October and November and in May and June. Any metal goods that are liable to rust should be amply protected against the rapid oxidation which follows exposure to the air during a tropical rainy season. Foodstuffs should only be sent in air-tight tin containers or in oiled-paper wrapping and should not be sent in pasteboard boxes. Among other classes of merchandise which are liable to rapid deterioration from the effects of tropical heat are rubber goods, dry batteries, and prepared tobaccos.

FINANCING OF FOREIGN TRADE.

PRICE QUOTATIONS.

American exporters should quote prices in American gold, or preferably in Argentine gold (1 peso=\$0.965), per 100 kilos where goods are being sold by weight. Quotations should be c. i. f. Buenos Aires or Montevideo. Since there are two stages in the voyage from the United States to Paraguay, freight for one of which must be paid at the point of shipment and for the other at destination, quotations f. o. b. New York are inadvisable.

CREDITS.

There is considerable variety in the credit terms granted to Paraguayan importers. Before the war six months with interest at one-half of 1 per cent per month was the general rule. Nine months were frequently allowed, and even these terms were permitted considerable flexibility. The Germans would grant extensions of time up to a year or 15 months. After the forced liquidation of accounts in the early part of the war there was a tendency to the shortening of the time allowed. This was due to the disappearance of the old Anglo-German rivalry for Paraguayan trade, to the increased habit of buying from a nearer source in Buenos Aires or Montevideo, and

Special Agents Series No. 199.



FIG. 17.—PORT OF ASUNCION AT HIGH WATER.



FIG. 18.—PORT OF ASUNCION AT LOW WATER.

Special Agents Series No. 199.



FIG. 19.—STEAMER WITH CATTLE LIGHTERS.



FIG. 20.—LOADING CARGO STEAMERS AT ASUNCION.

to the effect of greater dependence on American exporters, who were accustomed to granting shorter time to customers.

The prevailing terms at present are from three to four months from date of shipment, though cases of 60 days are not uncommon. With the reestablishment of more normal competitive conditions there is already a reaction toward the longer antewar terms, though it is doubtful if they again reach the extremes that resulted from the competition between the English and the Germans. On the other hand, Paraguayan importers will only pay cash with an order when there is no other means of getting goods which they must have to supply the demand of their trade. In general they are disposed to complain of the short terms demanded by American exporters.

The special conditions which affect credit terms in the Paraguayan market are as follows: The long time required between sending an order and receiving the goods, commonly amounting to from three to six months; the long time needed for turnover in local business, especially outside the capital, where it is usually from eight months to a year, although in Asuncion it is from three to four months under normal business conditions; the high interest rate charged by Asuncion banks, amounting to 12 per cent per year, whereas the usual interest rate on time bills of exchange is only 6 per cent; and the peculiar exchange situation in Paraguay, due to which the maturity of a bill for goods may coincide with a high gold rate. As a result of the uncertainty of the gold rate, the importer prefers to have some leeway in his time of payment. He would rather have six months' time, with the privilege of paying in four, or with the right of extension to seven months, if the gold rate were unfavorable at the end of the six months, than to have eight months with the obligation of meeting the debt on the very day of maturity. European exporters often list the interest charge as a separate item in the bill, along with insurance, cost of packing, cartage, etc, instead of including it in the general cost total.

CREDIT INFORMATION.

Information in regard to the standing of Asuncion firms can be obtained from one of the three local banks—the Banco Mercantil, the Banco de la Repùblica, or the Banco de España y Paraguay. There is a natural disposition on the part of these banks to give a favorable report on their own clients and to be noncommittal at best on the clients of rival banks. Dun's service covers Paraguay, though inadequately. A similar service is that supplied by the Veritas, with headquarters in Buenos Aires. It may be said in this connection that the better-known houses are very sound and that a policy of frank confidence in dealing with them will give much more satisfactory results than one of suspicion and dickering.

SHIPPING DOCUMENTS.

The practice usually followed in handling the financial and other papers in connection with shipments to Paraguay is well treated in the following report by American Consul Balch in Asuncion, on the basis of information supplied by the Banco Mercantil, the leading commercial bank of Paraguay:

Imports into Paraguay are always covered by bills of exchange drawn on the consignees. As all imported goods must be transshipped at Buenos Aires or

Montevideo it is necessary to send one full set of the shipping documents to the transshipping, or the consignee's, agent in the port of transshipment so as to avoid delay, for drafts are not accepted in Asuncion until the goods arrive.

According to law, goods destined to Paraguayan ports must be covered by a Paraguayan consular invoice and the shipping company's bill of lading. But as the law governing consular invoices is defective, goods are permitted entry if the invoice is omitted. In every case the bill of lading must be duly viséed by a Paraguayan consular officer.

Bills of lading.—Occasionally goods are routed to Asuncion on one bill of lading covering both the ocean and the river carriage, but in such cases it is necessary to send one full set of properly viséed shipping documents to the consignee's agent at the port of transshipment to avoid long delays, as shipping companies at Buenos Aires and Montevideo are extremely slow in the matter of transshipping if left alone.

It is generally preferable to ship on two bills of lading, one to Buenos Aires or Montevideo and the other for the river steamer to Asuncion, the latter of which is obtained at the port of transshipment. It is necessary that the first bill of lading show that the goods are in transit to Paraguay in order to avoid the Argentinian or Uruguayan duty.

Collection charges for drafts.—The usual fee charged by Asuncion banks for the collection of accounts held by foreign banks on all classes of drafts, whether clean, documentary, or time, is one-fourth of 1 per cent, with a minimum charge of 25 cents Argentine gold.

Revenue stamps.—Each draft presented for collection must bear a Paraguayan stamp. The stamps required are as follows: For sight drafts and up to six days, 50 centavos (now about 3 cents); for drafts of nine days up to six months, 1 peso per \$1,000 or more; for drafts of more than six months, 2 pesos per \$1,000 or more. Such expenses are usually charged against the drawer of the draft. Checks or drafts remitted by a Paraguayan bank in settlement of collections for foreign banks do not require stamps.

Protest practices.—The commercial code of Paraguay is the same as that of Argentina. Items must be presented before 11 o'clock a. m. on the day following due date. A notary draws up the act and notifies the drawee, who states his reason for not paying. The note of protest is made by the notary on back of draft, a copy of which may be obtained when required.

The regular protest charge is 30 Paraguayan pesos for each signature to draft. If the draft is not in Spanish an additional translation charge of 60 Paraguayan pesos for each page is made. These charges are made regardless of whether the bill is taken up or not.

Banks accept goods for delivery.—Banks generally accept goods on consignment for transfer to drawee according to terms specified in bill, but only when goods represent value of bills sent for collection. The only charges for such services are those specified above. Banks do not accept goods for the sole purpose of selling or storing.

Entry of goods.—The entry of goods is made at Paraguayan customhouses on the presentation of the manifest by the shipping company's agent. After unloading, the goods must be cleared from the customhouse within three days to avoid storage charges. Warehousing is charged for after the expiration of the three days at the rate of one-fourth of 1 per cent per calendar month or fraction thereof up to six months and 1 per cent per month after six months. No fines are imposed on account of delays of entry.

Goods not cleared within one year of ship's entry are sold at public auction. In the case of inflammable or perishable goods the time is reduced to eight days. The expenses assessed against goods sold at public auction are those incurred by the customs clearing agent and the warehouse charges mentioned in the preceding paragraph and are usually ultimately borne by the consignee.

Storage and insurance of goods.—When necessary, Asuncion banks will arrange for the storage and insurance of goods. The storage rates range between one-half and 1 per cent per month, depending on the class of goods. Cartage costs about 30 Paraguayan pesos per 1,000 kilos.

The customhouse insurance rate is \$7.50 per \$1,000 per annum. The rate in private warehouses is \$3.75 per \$1,000 per annum. For shorter periods the rates are as follows: Up to one month, 20 per cent of annual premium; up to three months, 40 per cent; up to six months, 70 per cent; up to nine months, 85 per cent.

It depends upon the causes for storage as to who shall bear the expense of warehousing and insurance.

Goods entered without bill of lading.—Goods may be obtained from the customhouse by the consignee under declaration that the bill of lading has not arrived and that it will be presented within 14 days after delivery of the goods. A deposit of 210 Paraguayan pesos at the time the declaration is furnished is required by the Paraguayan customs office as a guaranty that the bill of lading will be presented, which is forfeited if the document is not presented within the time limit. If, however, bills of lading are made out "to order" it is not possible to secure the goods previous to the arrival of the bill of lading, provided there is no clause such as "notify," etc.

If the foreign exporter or banker wishes to hold control over goods sent to Paraguay, the bills of lading should be made out to the collecting bank in Asuncion. But it is necessary, as previously pointed out, to send one full set of the shipping documents to the transshipping agent at Buenos Aires or Montevideo.

Banks arrange for sale of refused goods.—In case the consignee refuses to accept goods on their arrival, banks will generally arrange with a broker to sell the goods, if the exporter desires it. For such services the bank charge is usually 1 per cent. The brokerage charge depends on the class of goods.

Banks sometimes allow consignees to examine goods before delivery without obtaining exporter's permission, if the circumstances seem to warrant such action.

Returning goods.—Before goods may be cleared from a Paraguayan customhouse the import duty must be paid. In the case of goods that have been consigned to a collecting bank which are to be returned the duty is usually paid in the form of a "banker's guaranty." It is necessary to obtain a "reexport permit" from the Paraguayan Treasury Department before goods may be reexported or returned to country of origin. If the permit is obtained, the bankers are not required to pay the duty for which guaranty has been given, provided the customhouse landing certificate is presented within 60 days, after which time the guaranty is forfeited. If the duty is once paid in actual money it can not be returned.

Phraseology of drafts.—The usual banking phrase used in drafts drawn against Paraguayan consignees in dollars to enable the remittance of the face amount of such bills without any deduction is: "Payable with exchange, commission, stamps, and all costs for sight drafts in dollars on New York." The Banco Mercantil del Paraguay, of Asuncion, gave the following wording: "Payable at the bank's selling rate for sight or on New York, plus collection charges and stamps for account of drawee." In order to include collection charges the words "plus agent's commission, — per cent," should be added to the preceding. If interest is to be included, the draft should contain, in addition to the foregoing, the words "Interest at — per cent from — to —."

The extent to which Paraguayan business is financed through Buenos Aires is illustrated by the following record of drafts sold by Asuncion banks during 1918:

| | Gold pesos. |
|-----------------|-------------------|
| Argentina | 18,985,785 |
| England | 341,484 |
| Uruguay | 339,714 |
| France | 145,633 |
| United States | 121,648 |
| Spain | 119,051 |
| Italy | 113,635 |
| Holland | 24,591 |
| Other countries | 3,984 |
| Total | 20,195,525 |

IMPORT DUTIES.

The Paraguayan customs tariff is based largely on that of Argentina, though somewhat simplified. The indefiniteness of the regulations in some particulars permits considerable latitude to custom-

house employees in their interpretation. Some of the classifications are also very illogical. The system is theoretically ad valorem but in practice generally has the effect of a specific duty. A number of articles are, however, listed outright in the schedules for the payment of specific duties.

The scale of valuations used in the assessment of import duties was for many years much lower than the actual value of the articles imported. In 1917 a commission of three members was created for the purpose of revising the scale of valuations to accord more closely with current market values. In 1918 this commission declared that the excess of the true value over the tariff valuations of the different lines of merchandise amounted approximately to the following percentages:

| | Per cent. |
|--|-----------|
| Foodstuffs and groceries..... | 110 |
| Beverages..... | 65 |
| Tobacco, cigars, and cigarettes..... | 55 |
| Tanned hides and furs..... | 90 |
| Saddlery..... | 90 |
| Boots and shoes..... | 105 |
| Furniture..... | 35 |
| Musical instruments..... | 40 |
| Hats..... | 100 |
| Hardware, ship chandlery, and machinery..... | 115 |
| Electrical goods and lighting fixtures..... | 90 |
| Firearms..... | 80 |
| Porcelain and glassware..... | 75 |
| Notions, stationery, and perfumery..... | 130 |
| Drugs..... | 130 |
| Ready-made clothing..... | 120 |
| Textiles..... | 140 |
| Live stock..... | 23 |

In October, 1919, the commission increased the scale of values in the following proportions:

| | Per cent. |
|---|-----------|
| Jewelry, watches, clocks, and silverware..... | 20 |
| Skins and tanned leather..... | 30 |
| Musical instruments..... | 40 |
| Boots, shoes, and supplies; trunks, valises, and saddlery; furniture..... | 50 |
| Groceries and foodstuffs; tobaccos; hats and caps; hardware, cutlery, machinery, farming implements, automobiles; electric and lighting supplies; firearms and ammunition; chinaware, glassware, and crockery; drugs and chemicals; notions, paper goods; ready-to-wear clothing; textiles..... | 60 |
| Wines and liquors..... | 100 |

The following exceptions were made to the increases:

| | Per cent. |
|--|-----------|
| Common wines..... | 30 |
| Shoes. (Seven articles of the shoe schedule to remain as fixed.) | |
| Ready-to-wear clothing made of cotton..... | 40 |
| Cotton piece goods..... | 40 |
| Fine toilet soaps, cosmetics, and perfumes..... | 80 |
| Such articles of prime necessity as edible oils, rice, sugar, flour, wheat, common laundry soap, kerosene, and salt were not advanced. | |

PAYMENT OF DUTIES.

The consignee is notified by the customs authorities of the arrival of a consignment of goods and the list of consignments is, more-

over, published daily in the local newspapers. After inspection of the goods and the fixing of the duty to be paid a statement declaring the amount of the duty is drawn up in triplicate. One copy is given to the consignee, another is sent to the National Treasury Department, and the third is deposited in the archives of the customhouse. The consignee presents this statement at the Banco de la República, where all customs duties are required to be paid, and the bank's certification to the payment of the duty is necessary before goods can be removed from the customhouse. An arrangement for paying the duty at the customhouse and during the hours when goods are being inspected and moved in the customs warehouses would facilitate operations considerably for importers. There are numerous customs brokers in Asuncion who are ready to take charge of the formalities of passing goods through the customs.

STATISTICS OF FOREIGN TRADE.

In quoting official Paraguayan statistics of the amount of foreign commerce distinction is made between tariff values and actual values. There is considerable discrepancy even among official figures and the so-called actual values only represent a nearer approximation to the real extent of the country's foreign trade than is furnished by the customs valuations.

TOTAL FOREIGN TRADE SINCE 1879.

The official customs values, expressed in gold pesos for the years 1879 to 1919, are as follows:

| Years. | Imports. | Exports. | Total trade. | Years. | Imports. | Exports. | Total trade. |
|-----------|-------------------------------|---------------------------------|---------------------------------|----------------|---------------------------------|---------------------------------|---------------------------------|
| 1879..... | Gold pesos. 956,144 | Gold pesos. 1,582,343 | Gold pesos. 2,538,487 | 1901..... | Gold pesos. 3,022,841 | Gold pesos. 2,584,803 | Gold pesos. 5,587,644 |
| 1880..... | 1,030,408 | 1,163,417 | 2,193,825 | 1902..... | 2,426,381 | 3,072,910 | 5,499,291 |
| 1881..... | 1,292,944 | 1,928,549 | 3,221,493 | 1903..... | 3,505,191 | 4,047,122 | 7,553,313 |
| 1882..... | 1,417,481 | 1,651,687 | 3,069,168 | 1904..... | 3,565,731 | 3,196,261 | 6,761,992 |
| 1883..... | 1,040,343 | 1,768,458 | 2,806,801 | 1905..... | 4,678,514 | 2,833,009 | 7,511,523 |
| 1884..... | 1,448,131 | 1,572,977 | 3,021,108 | 1906..... | 6,324,284 | 2,685,407 | 9,009,691 |
| 1885..... | 1,476,597 | 1,800,527 | 3,137,124 | 1907..... | 7,512,502 | 3,236,110 | 10,748,612 |
| 1888..... | 3,320,335 | 2,583,609 | 5,908,944 | 1908..... | 4,072,953 | 3,867,095 | 7,940,048 |
| 1889..... | 2,221,541 | 2,301,337 | 5,522,878 | 1909..... | 3,787,951 | 5,136,639 | 8,924,590 |
| 1890..... | 2,725,995 | 3,563,607 | 6,289,602 | 1910..... | 6,409,413 | 4,916,918 | 11,336,331 |
| 1891..... | 1,845,272 | 3,166,136 | 5,011,408 | 1911..... | 6,694,996 | 4,735,573 | 11,430,569 |
| 1892..... | 2,190,116 | 1,686,671 | 3,876,787 | 1912..... | 5,350,600 | 4,235,723 | 9,586,323 |
| 1893..... | 2,533,299 | 1,302,092 | 3,835,391 | 1913..... | 8,119,997 | 5,830,929 | 13,750,926 |
| 1894..... | 2,222,203 | 1,807,915 | 4,030,118 | 1914..... | 5,149,465 | 4,594,358 | 9,733,823 |
| 1895..... | 2,460,060 | 2,121,438 | 4,581,488 | 1915..... | 2,405,888 | 5,616,172 | 8,022,060 |
| 1896..... | 2,786,335 | 2,048,733 | 4,835,068 | 1916..... | 4,080,024 | 4,861,678 | 9,541,702 |
| 1897..... | 2,211,465 | 2,555,271 | 4,766,736 | 1917..... | 5,098,581 | 6,494,902 | 11,593,383 |
| 1898..... | 2,608,487 | 2,463,294 | 5,071,781 | 1918..... | 5,201,726 | 7,171,319 | 11,373,045 |
| 1899..... | 2,510,591 | 2,290,753 | 4,801,344 | 1919(9 months) | 5,013,959 | 5,867,594 | 10,881,553 |
| 1900..... | 2,555,925 | 2,652,067 | 5,207,992 | | | | |

The actual values of the foreign trade for the period 1914 to 1919, as computed by the Government Statistical Office, were as follows:

| Years. | Imports. | Exports. | Total trade. | Balance. |
|--------|--------------------|--------------------|--------------------|-------------------|
| 1914 | <i>Gold pesos.</i> | <i>Gold pesos.</i> | <i>Gold pesos.</i> | <i>Gold pesos</i> |
| 1915 | 5,149,465 | 5,558,807 | 10,708,272 | 409,342 |
| 1916 | 3,127,654 | 8,890,999 | 12,018,653 | 7,763,345 |
| 1917 | 7,020,036 | 8,851,919 | 15,871,955 | 1,831,883 |
| 1918 | 9,177,446 | 11,705,012 | 20,882,458 | 2,527,566 |
| 1919 | 11,051,622 | 11,399,712 | 22,451,334 | 348,000 |
| | 14,662,273 | 17,228,131 | 31,890,404 | 2,566,858 |

IMPORTS BY CLASSES OF GOODS.

According to classes of goods, the imports for the same period were as follows:

| Classes of goods. | 1914 | 1915 | 1916 | 1917 | 1918 |
|--|--------------------|--------------------|--------------------|--------------------|--------------------|
| Foodstuffs and groceries | <i>Gold pesos.</i> | Gold pesos. | Gold pesos. | Gold pesos. | Gold pesos. |
| Beverages | 1,356,336 | 854,948 | 1,603,276 | 2,565,596 | 3,001,641 |
| Tobacco, cigars, and cigarettes | 205,412 | 105,846 | 221,306 | 376,430 | 390,413 |
| Tanned hides and furs | 14,877 | 8,428 | 9,593 | 10,764 | 16,015 |
| Saddlery | 31,961 | 17,488 | 38,506 | 58,617 | 60,838 |
| Boots and shoes | 35,268 | 19,427 | 4,015 | 13,345 | 7,317 |
| Furniture | 39,344 | 10,207 | 40,352 | 57,200 | 90,889 |
| Jewelry | 25,390 | 3,228 | 7,197 | 11,812 | 20,299 |
| Musical instruments | 4,858 | 1,360 | 2,949 | 3,481 | 1,449 |
| Hats | 17,658 | 3,388 | 8,746 | 14,243 | 13,285 |
| Hardware | 42,336 | 16,806 | 47,916 | 94,534 | 100,244 |
| Electrical goods and lighting fixtures | 1,162,258 | 416,851 | 1,160,721 | 1,001,758 | 1,859,778 |
| Firearms | 85,922 | 14,515 | 48,966 | 31,579 | 67,098 |
| Porcelain and glassware | 60,613 | 4,758 | 17,832 | 57,832 | 45,325 |
| Drugs | 74,223 | 17,909 | 32,854 | 68,906 | 73,798 |
| Notions, etc | 234,743 | 153,085 | 248,175 | 369,337 | 455,889 |
| Ready-made clothing | 308,077 | 130,957 | 303,480 | 506,893 | 625,382 |
| Textiles | 106,882 | 124,632 | 237,549 | 300,111 | 363,065 |
| Live stock | 1,016,413 | 1,032,278 | 2,891,097 | 3,455,712 | 3,635,844 |
| Government orders | 65,465 | 53,272 | 95,494 | 179,294 | 223,033 |
| Total | 5,149,465 | 3,127,654 | 7,020,036 | 9,177,446 | 11,051,622 |

^a Since 1915 importations of goods by the Government are not classified separately in the official statistics of trade.

The country was overstocked at the beginning of the war. It had abused the liberal credits allowed its importers and contracted debts year after year that were greater than the natural capacity of the nation to pay. Since 1903, with the single exception of 1909, there had been an unfavorable balance against the country and production was by no means keeping pace with the expenditures for imported goods. The war brought a sudden reckoning, with a call for the liquidation of the country's foreign obligations, which was accompanied by something like a crisis in local business circles. There was a forced retrenchment in purchases, especially marked in 1915, so that in the five years 1914-1918 the country was able to accumulate a favorable balance with which to cancel its business debts and begin a sounder commercial career.

IMPORTS BY COUNTRIES OF SHIPMENT.

The total imports by countries of shipment for the period 1906-1913 were as follows, values given being the official tariff figures:

| Countries. | 1906 | 1907 | 1908 | 1909 | 1910 | 1911 | 1912 | 1913 |
|----------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | Gold pesos. |
| Argentina..... | 1,089,321 | 1,074,384 | 766,519 | 588,688 | 697,080 | 781,630 | 703,109 | 1,090,156 |
| Uruguay..... | 39,516 | 49,522 | 40,981 | 46,421 | 45,907 | 43,733 | 36,638 | 60,165 |
| United States..... | 339,816 | 405,572 | 222,763 | 210,120 | 318,332 | 398,048 | 315,945 | 488,328 |
| Brazil..... | 40,657 | 41,210 | 37,151 | 15,877 | 43,392 | 59,143 | 43,493 | 46,122 |
| Chile..... | 7,493 | 5,642 | | | 3,206 | 4,158 | 3,417 | 4,058 |
| Germany..... | 1,499,697 | 2,811,833 | 1,192,619 | 759,669 | 1,141,392 | 1,858,871 | 1,155,398 | 2,243,924 |
| United Kingdom..... | 1,680,552 | 1,743,048 | 856,333 | 1,289,671 | 2,695,577 | 1,974,024 | 1,341,705 | 2,323,033 |
| France..... | 624,829 | 725,592 | 384,309 | 243,418 | 297,065 | 420,754 | 381,545 | 537,098 |
| Belgium..... | 84,692 | 180,889 | 49,489 | 77,585 | 153,442 | 158,598 | 132,943 | 189,931 |
| Italy..... | 538,230 | 506,664 | 289,719 | 263,554 | 344,582 | 255,473 | 317,732 | 494,797 |
| Spain..... | 310,132 | 360,723 | 210,559 | 185,057 | 375,964 | 419,138 | 329,430 | 430,029 |
| Austria-Hungary..... | | 8,700 | 62,246 | 150,658 | 109,318 | 128,964 | 87,745 | |
| Netherlands..... | 21,219 | 89,313 | 5,712 | 9,182 | 14,106 | 17,228 | 15,429 | 30,080 |
| Portugal..... | | | 5,141 | 5,233 | | 13,413 | 10,033 | 20,537 |
| Switzerland..... | 9,773 | 9,919 | 5,669 | 3,509 | 6,313 | 8,845 | 6,282 | 15,709 |
| Other countries..... | 40,356 | 38,191 | 17,289 | 27,771 | 181,896 | 72,625 | 28,537 | 56,885 |
| Total..... | 6,324,283 | 7,512,502 | 4,072,953 | 3,787,951 | 6,419,412 | 6,694,995 | 5,350,600 | 8,119,997 |

The relative position of the principal exporting countries during the years 1914 to 1918, expressed in actual values and percentages, is shown by the following table:

| Countries. | 1914 | | 1915 | | 1916 | | 1917 | | 1918 | |
|----------------------|--------------------|---------------|--------------------|---------------|--------------------|---------------|--------------------|---------------|--------------------|---------------|
|  | Amount. | Per-cent-age. | Amount. | Per-cent-age. | Amount. | Per-cent-age. | Amount. | Per-cent-age. | Amount. | Per-cent-age. |
| | <i>Gold pesos.</i> | | <i>Gold pesos.</i> | | <i>Gold pesos.</i> | | <i>Gold pesos.</i> | | <i>Gold pesos.</i> | |
| Argentina..... | 930,397 | 18.0 | 1,025,732 | 32.8 | 2,403,153 | 34.3 | 3,346,547 | 36.5 | 5,036,313 | 45.5 |
| Germany..... | 1,298,002 | 27.0 | 216,670 | 6.9 | 48,198 | .7 | 32,202 | .3 | 1,923 | ..... |
| Austria-Hungary..... | 68,997 | 1.3 | 1,358 | ..... | ..... | ..... | 29 | ..... | ..... | ..... |
| Belgium..... | 116,878 | 2.3 | 5,981 | .2 | 3,630 | ..... | 1,555 | ..... | 2,586 | ..... |
| Brazil..... | 23,953 | .0 | 11,933 | .4 | 53,861 | .8 | 331,670 | 3.7 | 528,715 | 4.7 |
| Chile..... | 4,046 | ..... | 1,114 | ..... | 2,736 | ..... | 7,571 | ..... | 5,197 | ..... |
| United States..... | 428,950 | 8.3 | 281,754 | 9.0 | 873,204 | 12.4 | 1,562,478 | 17.0 | 1,817,136 | 16.5 |
| Spain..... | 280,346 | 5.4 | 152,406 | 4.9 | 270,935 | 3.9 | 557,503 | 6.1 | 630,308 | 5.9 |
| France..... | 250,185 | 5.0 | 76,064 | 2.5 | 109,475 | 1.6 | 138,794 | 1.6 | 125,461 | 1.2 |
| Netherlands..... | 9,823 | .2 | 18,002 | .6 | 23,202 | .3 | 16,821 | .1 | 22,580 | .2 |
| United Kingdom..... | 1,173,217 | 22.7 | 1,033,348 | 33.0 | 2,868,511 | 38.5 | 2,690,048 | 20.4 | 2,364,754 | 21.4 |
| Italy..... | 356,316 | 6.9 | 227,413 | 7.3 | 396,233 | 5.6 | 244,505 | 2.7 | 182,989 | 1.6 |
| Norway..... | | | | | | | 23,933 | .2 | 12,038 | .1 |
| Portugal..... | 6,049 | ..... | 2,011 | .1 | 4,095 | ..... | 6,773 | ..... | 6,110 | ..... |
| Switzerland..... | 11,685 | ..... | 2,158 | .1 | 1,749 | ..... | 3,623 | ..... | ..... | ..... |
| Uruguay..... | 38,127 | .8 | 40,394 | 1.2 | 78,420 | 1.1 | 150,637 | 1.7 | 177,992 | 1.6 |
| Other countries..... | 43,494 | 1.6 | 31,316 | 1.0 | 52,634 | .8 | 62,757 | .7 | 117,520 | 1.3 |
| Total..... | 5,149,465 | 100.0 | 3,127,654 | 100.0 | 7,020,036 | 100.0 | 9,177,446 | 100.0 | 11,051,622 | 100.0 |

IMPORTS, BY COUNTRIES AND CLASSES OF GOODS.

The actual value of imports by classes and principal countries of origin during the year 1918 was as follows:

| Classes. | Argentina. | Japan. | Brazil. | Spain. | France. | United Kingdom. |
|---------------------------|---------------------------------|-----------------------------|-------------------------------|-------------------------------|-----------------------------|------------------------------|
| Foodstuffs..... | <i>Gold pesos.</i> 2,176,973 | <i>Gold pesos.</i> 5,034 | <i>Gold pesos.</i> 500,611 | <i>Gold pesos.</i> 107,436 | <i>Gold pesos.</i> 4,301 | <i>Gold pesos.</i> 28,298 |
| Beverages..... | 320,730 | | 8 | 27,527 | 11,849 | 9,192 |
| Tobaccos..... | 1,542 | | 8,223 | | | |
| Hides and skins..... | 36,953 | | 19 | | 580 | |
| Saddlery..... | 4,864 | | | | | 237 |
| Boots and shoes..... | 49,553 | | 540 | 4,326 | 375 | 1,168 |
| Furniture..... | 15,115 | | | | 359 | 1,003 |
| Jewelry..... | 833 | | | | | |
| Musical instruments..... | 4,801 | 251 | | 3,599 | 550 | |
| Hats..... | 38,676 | | | 16 | | 1,582 |
| Hardware..... | 880,705 | 2,141 | 2,402 | 26,028 | 6,295 | 125,738 |
| Electrical goods..... | 44,724 | | | 63 | 53 | 3,490 |
| Firearms..... | 14,094 | | | 807 | | 4,822 |
| China and glass ware..... | 50,965 | 1,058 | | 5,033 | 119 | 9,314 |
| Drugs..... | 170,484 | 7 | 1,357 | 6,985 | 28,007 | 34,49 |
| Notions..... | 325,878 | 1,021 | 7,206 | 39,781 | 40,011 | 117,852 |
| Ready-made clothing..... | 273,634 | 7,810 | 136 | 12,830 | 5,223 | 10,707 |
| Textiles..... | 403,061 | 71,585 | 8,213 | 415,877 | 27,139 | 2,016,820 |
| Live stock..... | 222,728 | | | | | |
| Total..... | 5,036,313 | 88,907 | 528,715 | 650,308 | 125,461 | 2,364,754 |

| Classes. | Italy. | United States. | Uruguay. | Other countries. | Total. |
|---------------------------|------------------------------|-------------------------------|------------------------------|------------------------------|---------------------------------|
| Foodstuffs..... | <i>Gold pesos.</i> 10,210 | <i>Gold pesos.</i> 133,946 | <i>Gold pesos.</i> 20,087 | <i>Gold pesos.</i> 14,745 | <i>Gold pesos.</i> 3,001,641 |
| Beverages..... | 15,645 | 479 | 452 | 4,531 | 390,413 |
| Tobaccos..... | 495 | | 248 | 5,637 | 16,015 |
| Hides and skins..... | | 3,342 | 19,944 | | 60,838 |
| Saddlery..... | | 2,145 | 15 | | 7,317 |
| Boots and shoes..... | | 33,481 | 1,699 | 287 | 90,889 |
| Furniture..... | | 2,607 | 675 | | 20,299 |
| Jewelry..... | | 530 | | 36 | 1,449 |
| Musical instruments..... | 15 | 3,979 | | 28 | 13,285 |
| Hats..... | 37,442 | 558 | 21,970 | | 100,244 |
| Hardware..... | 6,353 | 797,340 | 8,912 | 3,864 | 1,859,778 |
| Electrical goods..... | 1,163 | 14,577 | | 3,028 | 67,098 |
| Firearms..... | | 25,412 | 190 | | 45,325 |
| China and glass ware..... | | 6,975 | 254 | 80 | 72,798 |
| Drugs..... | 2,206 | 194,582 | 13,959 | 3,325 | 453,889 |
| Notions..... | 9,490 | 55,090 | 6,925 | 22,128 | 625,382 |
| Ready-made clothing..... | 1,331 | 51,238 | 176 | | 363,085 |
| Textiles..... | 98,669 | 490,805 | 82,145 | 21,530 | 3,635,844 |
| Live stock..... | | | 305 | | 223,033 |
| Total..... | 182,989 | 1,817,136 | 177,992 | 79,119 | 11,051,622 |

EXPORTS, BY COUNTRIES OF DESTINATION.

Total exports according to countries of destination during the years 1906 to 1913 were as follows, the figures being based on tariff valuations:

| Countries. | 1906 | 1907 | 1908 | 1909 | 1910 | 1911 | 1912 | 1913 |
|----------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | Gold pesos. |
| Argentina..... | 1,135,574 | 1,850,110 | 2,000,380 | 2,547,275 | 2,858,010 | 2,629,094 | 2,445,978 | 3,516,417 |
| Uruguay..... | 499,218 | 475,624 | 548,193 | 710,804 | 531,884 | 728,654 | 697,697 | 694,022 |
| United States..... | 757 | 2,601 | 1,434 | 5,089 | 2,146 | 1,722 | 611 | ----- |
| Brazil..... | 20,321 | 25,145 | 30,173 | 224,240 | 159,227 | 46,829 | 56,775 | 38,907 |
| Bolivia..... | 6,141 | 1,304 | 1,773 | 5,132 | 2,194 | 5,631 | ----- | 3,433 |
| Germany..... | 765,277 | 566,708 | 971,794 | 1,379,907 | 904,849 | 1,020,561 | 874,050 | 1,235,758 |
| United Kingdom..... | 325 | 3,479 | ----- | 2,103 | 15,20 | 818 | 1,050 | 163 |
| France..... | 39,900 | 9,915 | 80,905 | 44,877 | 25,514 | 74,629 | 34,225 | 34,091 |
| Belgium..... | 203,628 | 268,650 | 182,397 | 73,040 | 12,344 | 22,335 | 10,991 | 57,866 |
| Italy..... | 11,250 | 29,299 | 15,455 | 86,426 | 24,885 | 10,292 | 11,451 | ----- |
| Spain..... | 13,015 | ----- | 28,214 | 101,494 | 317,304 | 157,848 | 101,586 | 25,974 |
| Austria..... | ----- | ----- | ----- | ----- | 350 | 12,489 | 100 | 10,436 |
| Netherlands..... | ----- | ----- | ----- | 9,443 | 1,050 | 5,780 | 2,080 | ----- |
| Portugal..... | ----- | ----- | ----- | ----- | ----- | 4,000 | ----- | ----- |
| Switzerland..... | ----- | ----- | ----- | 12,321 | ----- | ----- | ----- | 125 |
| Russia..... | ----- | ----- | ----- | ----- | ----- | ----- | ----- | 1,680 |
| India..... | ----- | ----- | ----- | ----- | ----- | 247 | ----- | ----- |
| Other countries..... | 3,044 | 5,877 | 113 | ----- | ----- | ----- | 288 | 6 |
| Total..... | 2,695,407 | 3,230,109 | 3,867,094 | 5,136,638 | 4,616,918 | 4,735,572 | 4,235,723 | 5,630,929 |

The relative position of the principal countries to which goods were exported during the years 1914 to 1918, expressed in actual values and percentages, is shown in the following table:

| Countries. | 1914 | | 1915 | | 1916 | | 1917 | | 1918 | |
|---------------------|-----------|---------------|-----------|---------------|-----------|---------------|------------|---------------|------------|---------------|
| | Amount. | Per-cent-age. | Amount. | Per-cent-age. | Amount. | Per-cent-age. | Amount. | Per-cent-age. | Amount. | Per-cent-age. |
| Argentina..... | 3,293,710 | 59.2 | 5,757,853 | 64.8 | 6,508,608 | 73.5 | 8,958,751 | 76.5 | 7,379,806 | 65.0 |
| Spain..... | 98,117 | 1.8 | 103,653 | 1.2 | 678,128 | 7.6 | 1,060,478 | 9.1 | 1,157,424 | 10.1 |
| United States..... | 13,402 | .2 | 470,674 | 5.4 | 428,457 | 4.8 | 370,011 | 3.2 | 931,820 | 8.1 |
| France..... | 61,916 | 1.1 | 111,976 | 1.3 | 237,152 | 2.7 | 321,575 | 2.7 | 806,113 | 7.0 |
| Uruguay..... | 716,219 | 13.3 | 908,694 | 10.2 | 417,846 | 4.7 | 813,689 | 6.9 | 772,646 | 6.8 |
| Italy..... | 39,727 | .7 | 61,054 | .7 | 266,071 | 3.0 | 102,767 | .9 | 269,078 | 2.3 |
| United Kingdom..... | 140,115 | 2.5 | 313,028 | 3.5 | 146,195 | 1.6 | 60,776 | .5 | 70,852 | .6 |
| Brazil..... | 32,723 | .6 | 44,767 | .5 | 28,603 | .3 | 11,762 | .1 | 9,873 | .1 |
| Chile..... | ----- | ----- | ----- | ----- | 1,334 | ----- | 3,361 | ----- | 2,100 | ----- |
| Netherlands..... | 134,208 | 2.2 | 874,808 | 9.8 | 140,715 | 1.6 | 2,520 | ----- | ----- | ----- |
| Belgium..... | 43,088 | .8 | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| Sweden..... | 2,036 | ----- | 6,332 | .1 | ----- | ----- | 360 | ----- | ----- | ----- |
| Bolivia..... | 268 | ----- | 1,595 | ----- | 810 | ----- | ----- | ----- | ----- | ----- |
| Russia..... | 258 | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| Switzerland..... | 228 | ----- | 28,082 | .4 | ----- | ----- | ----- | ----- | ----- | ----- |
| Norway..... | ----- | ----- | 87,843 | .9 | ----- | ----- | ----- | ----- | ----- | ----- |
| Denmark..... | ----- | ----- | 94,680 | 1.1 | ----- | ----- | 962 | ----- | ----- | ----- |
| Cuba..... | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| Germany..... | 982,792 | 17.5 | 6,960 | .1 | ----- | ----- | ----- | ----- | ----- | ----- |
| Total..... | 5,558,807 | 100.0 | 8,890,999 | 100.0 | 8,851,919 | 100.0 | 11,705,012 | 100.0 | 11,399,712 | 100.0 |

EXPORTS, BY COUNTRIES AND CLASSES OF GOODS.

The actual value of exports, by classes and countries of immediate destination, during 1918 was as follows:

| Classes. | Argentina. | Uruguay. | France. | Italy. | United States. |
|---------------------------|---------------------------------|-------------------------------|------------------------------|-------------------------------|-------------------------------|
| Pastoral..... | <i>Gold pesos.</i> 2,327,575 | <i>Gold pesos.</i> 435,108 | <i>Gold pesos.</i> 55,690 | <i>Gold pesos.</i> 171,438 | <i>Gold pesos.</i> 905,231 |
| Agricultural..... | 1,590,667 | 177,125 | 705,116 | 90,749 | 377 |
| Forest..... | 3,418,324 | 156,454 | 43,792 | 5,400 | 24,208 |
| Mineral..... | 1,123 | | | | |
| Of the chase..... | 4,136 | 3,703 | 1,515 | 1,463 | 2,004 |
| Reexported..... | 36,344 | 216 | | | |
| Exports free of duty..... | 384 | | | | |
| Not specified..... | 1,253 | 40 | | | |
| Total..... | 7,379,806 | 772,646 | 806,113 | 269,078 | 931,820 |

| Classes. | Spain. | United Kingdom. | Brazil. | Chile. | Total |
|---------------------------|-------------------------------|------------------------------|-----------------------------|-----------------------------|---------------------------------|
| Pastoral..... | <i>Gold pesos.</i> 257,656 | <i>Gold pesos.</i> 59,130 | <i>Gold pesos.</i> 5,031 | <i>Gold pesos.</i> ----- | <i>Gold pesos.</i> 4,216,349 |
| Agricultural..... | 849,079 | 10,720 | 2,825 | | 3,426,556 |
| Forest..... | 49,520 | 1,012 | 960 | 2,100 | 3,701,770 |
| Mineral..... | | | | | 1,123 |
| Of the chase..... | 1,169 | | | | 14,020 |
| Reexported..... | | | 409 | | 36,969 |
| Exports free of duty..... | | | 38 | | 422 |
| Not specified..... | | | 610 | | 1,903 |
| Total..... | 1,157,424 | 70,852 | 9,873 | 2,100 | 11,399,712 |

ARGENTINA'S POSITION IN THE TRADE.

The unusual position held by Argentina in the foreign commerce of Paraguay greatly minimizes the value of Paraguayan statistics as an index to the ultimate destination or point of origin of the exports and imports of the smaller country. The proportion of 45.5 per cent in the case of imports for 1918 and of 65 per cent in that of exports, amounting to even 76.5 per cent in 1917, does not represent the true proportion of either. This is to a great extent a purely transit trade. The same fact applies, though to a less extent, in the case of Uruguay.

Most of the manufactured goods which occupy an important place in the figures of imports from Argentina, such as hardware of all kinds, drugs, and textiles, are not of Argentine production, but were originally exported from Europe or the United States. In the case of exports Paraguayan hides, tobacco, and quebracho extract are shipped to Buenos Aires in large quantities for reexportation, but they are credited in the Paraguayan statistics as exports to Argentina. The true Argentine imports into Paraguay consist largely of such goods as wheat and flour, sugar, wines, and cattle. Paraguayan exports actually intended for consumption in Argentina consist for the most part of yerba, oranges, and timber.

In order to facilitate trade connections between the two countries, which their geographical position in relation to each other necessarily make so intimate, a treaty of free trade was signed in July, 1916, by representatives of both Republics. However, the treaty has not yet been ratified by either Congress.

The treaty is based on reciprocal privileges and advantages. It provides for the free entry into each country of all the products of the other, though it provides for the exemption from the provisions of the treaty for five years of sugar, matches, candles, boots and shoes, saddlery, furniture, and ready-made clothing. This exemption is particularly intended to allow the incipient Paraguayan industries in these lines a period in which to prepare themselves against competition from the Argentine. The treaty also provides for the free transit through either country of goods destined for a third country.

Though the treaty has been debated for years, the opposition of certain elements in both countries which fear its effects on their interests has blocked its passage. This is largely due to the fact that the products of both countries are similar, though in a different stage of development. This necessitates their exportation from one to the other, according as the national production of each country is adequate to the domestic demand.

The yerba and tobacco growing districts of Argentina fear the free competition of the Paraguayan product, as Paraguayan sugar does of that of Tucuman. The protests of Paraguayan manufacturers of the articles favored by the five-year exemption clause of the treaty is another obstacle to ratification. At present (November, 1919) Paraguayan shoe manufacturers are clamoring for higher tariff protection against Argentine competition. The Paraguayan tariff has little effect on the sale of Argentine matches in the country, and Argentine and Brazilian sugar are sold at a lower price in Asuncion than the native product. The removal of the tariff would place these domestic industries in an even more unfavorable situation. Paraguayans also fear the disturbance of the national budget that would result from the loss of revenue if the customs duties affected by the treaty are abolished. There is also a widespread suspicion of Argentine motives, which, whether justifiable or not, makes more difficult any arrangement between the two countries.

UNITED KINGDOM AND GERMANY IN IMPORT TRADE.

The United Kingdom, which had the advantage of a pioneer in the Paraguayan field, held first place in importations into Paraguay until 1908. In that year Germany took first place with 29 per cent of the total imports, as against Great Britain's 21 per cent. Until the war removed Germany from the market, the rivalry between the two countries was keen. In 1913 the United Kingdom regained her old place, with a percentage of 28.6 to Germany's 27.6. However, in 1914 the percentage stood 27 to 22.7 in Germany's favor. At this point, due to the allied blockade, Germany ceased to be a factor in the situation.

During the war the relative standing of French imports in the Paraguayan market fell from 5 per cent in 1914 to 1.2 per cent in 1918. Yet the proportion of imports from the United Kingdom rose even higher, and in 1915 and 1916 amounted to 33 and 38.5 per cent, respectively. In 1918 it had fallen to only 21.4 per cent. This high proportion is in contrast to the entirely negligible share of Paraguayan exports taken by Great Britain.

The strength of the British position lies in the textile business, which constitutes the largest item in Paraguay's import trade. Before the war the Germans were making rapid inroads in this field. In 1918 the United States sold nearly a half million dollars' worth of textiles to Paraguayan importers. The Catalan mills have also entered the market, as have to a lesser extent the Japanese. Brazilian cottons are another potential competitor in the field.

In their efforts to hold their Paraguayan trade the British labor under the handicap of a lack of direct representation in the country. There is only one strictly British mercantile house in Paraguay. On the other hand, there are two large German hardware stores in Asuncion, an important electrical-goods house, and the general importing firms of Krauch, Minner, and Staudt, besides others. Moreover, the English colony in Paraguay is very small, as against a growing German population. Germany's important place in the Paraguayan export trade also helped the progress of her own goods in the Paraguayan market. She formerly held first place among European nations in this respect, taking a large share of Paraguayan exports of tobacco, hides, and quebracho extract.

The respective places held by Germany and the United Kingdom in different lines of imports in 1914 and the place held by the latter in 1918 were as follows:

| Articles. | 1914 | | 1918, United King- dom. |
|---------------------------|--------------------|----------|----------------------------------|
| | United Kingdom. | Germany. | |
| Foodstuffs..... | 7 | 2 | 4 |
| Hides and skins..... | 2 | •1 | |
| Boots and shoes..... | 2 | 4 | 5 |
| Furniture..... | 6 | •1 | 3 |
| Jewelry..... | | 1 | |
| Musical instruments..... | 5 | •1 | 6 |
| Hats..... | 3 | 2 | 4 |
| Hardware..... | 1 | 2 | 3 |
| Electrical goods..... | | 1 | 3 |
| Firearms..... | 3 | 2 | 2 |
| China and glass ware..... | 4 | •1 | |
| Drugs..... | 3 | 2 | 3 |
| Notions..... | 3 | 1 | 2 |
| Ready-made clothing..... | 5 | 1 | 4 |
| Textiles..... | •1 | 2 | •1 |

* Proportion of total imports was over 50 per cent.

UNITED STATES TRADE.

During the five years 1914 to 1918 the percentage of the total imports of Paraguay which were received from the United States rose from 8.3 to 16.5, reaching the maximum of 17 per cent in 1917. For the first nine months of 1919 the percentage fell to 15.4. This only accounts for direct importations and does not include very considerable purchases of American goods made in Buenos Aires and Montevideo, particularly in such lines as hardware, drugs, and prepared foodstuffs. The relative position held by the United States in the more important classes of goods during 1917 and 1918 was as follows:

| Articles. | 1917 | 1918 | Articles. | 1917 | 1918 |
|---------------------------------------|------|------|---------------------------|------|------|
| Foodstuffs..... | 3 | 3 | China and glass ware..... | 4 | 3 |
| Boots and shoes..... | 1 | 2 | Drugs and chemicals..... | 1 | 1 |
| Hardware, cutlery, etc..... | 1 | 2 | Notions, etc..... | 3 | 3 |
| Electrical and lighting supplies..... | 1 | 2 | Ready-made clothing..... | 2 | 2 |
| Firearms and ammunition..... | 1 | 1 | Textiles..... | 2 | 2 |

In 1918 Argentina held first place in imports of boots and shoes, hardware, and electrical and lighting supplies. However, much of this, particularly in the latter two lines, represents reexports of American goods.

Much of the progress made by the United States during this period was the natural development of trade begun before the war. A considerable share of it was also a result of the favorable opportunity offered by the war, with the total elimination of Germany from the field and the curtailment of the normal production of the other belligerents. However, many connections were formed between American exporters and Paraguayan importers that have been to the satisfaction of both, and such relations should continue even after normal competitive conditions are restored. Much depends on the ability and willingness of American exporters to meet prices and credit terms offered by competitors in their efforts to regain their former place in the market. The quality of American manufactures has made a very successful appeal to local trade, and consumers have become accustomed to demanding certain brands of American goods.

The percentage of Paraguayan exports which was taken by the United States increased from 0.24 in 1914 to 8.1 in 1918, though it fell to 5.18 during the first nine months of 1919. The "actual" value of direct exports to the United States, which was 13,402 gold pesos in 1914, was 931,820 pesos in 1918. The largest items in the total for 1918 were corned beef and hides. While the exports of corned beef to the United States fell in 1919, direct shipments of quebracho extract increased.

PRINCIPAL LINES OF GOODS IMPORTED.

There follows a discussion of the Paraguayan market in different lines of trade.

FOODSTUFFS.

Total imports, 1918, 3,001,641 gold pesos; from United States, 133,946 pesos; from Argentina, 2,176,973 pesos.

Most of the imports of this class are represented by bulky products, such as wheat, rice, salt, and sugar. Flour is the largest single item. Kerosene to the extent of 47,289 pesos (tariff value) is also included.

The consumption of prepared foodstuffs is still limited to a relatively small minority of the better-to-do Paraguayans and to the foreign colony. The majority of the people live on fresh meat, manioc, maize, wheat or mandioca bread, rice, oranges and other native fruits, with a few vegetables. The high cost of canned goods and of preserves in glasses puts them beyond the reach of this class. Large quantities of preserves, jams, and jellies prepared from the guava and citrus fruits are put up in the country in flat cans. The canned

fruits and vegetables imported are largely American, but are ordered indirectly through Buenos Aires. Fish in cans (sardines, etc.) and vegetable oils for cooking are largely Spanish. In supplying perishable foodstuffs Argentina has a great advantage over all other countries, as it must soon have in other lines when its canning industry is more fully developed.

In Asuncion there are at least two large stores which carry a stock of high-grade grocery products and foodstuffs in general.

BOOTS AND SHOES.

Total imports, 1918, 90,889 gold pesos; from United States, 33,481 pesos; from Argentina, 49,553 pesos.

This subject is covered in detail in a monograph⁴ by Herman G. Brock, entitled "Boots and Shoes, Leather, and Supplies in Argentina, Uruguay, and Paraguay."

Though the aggregate of imports is very small, American shoes have gained a strong place in the local market. The best shoe stores in Asuncion now specialize in American footwear, especially in men's shoes. Argentine competition is particularly formidable in the matter of women's shoes, as the Argentine manufacturers have understood better than their rivals the peculiar demand in that line. This demand is for a short and fairly wide vamp, medium round toe, and high heels. Argentine shoes are generally more expensive than the American article, the wholesale price averaging from 1.50 to 2 gold pesos more per pair. The increasing proportion of people that wear shoes usually have them made in small local factories and shops. Two factors to be kept in mind when considering the Paraguayan market for shoes are the warm climate and the small proportion of the population which wears high-grade footwear. There is a good demand for oxfords and a rapidly increasing demand for white shoes.

FURNITURE.

Total imports, 1918, 20,299 gold pesos; from United States, 2,607 pesos; from Argentina, 15,115 pesos.

As the figures for imports show, the Paraguayan market for furniture is of little consequence. Most of the furniture used is made in the country, which supplies excellent woods for the purpose, such as petereby and trebol. Though this locally made furniture is of good appearance and substantial, prices are very high. Those who desire especially high-grade furniture buy in Buenos Aires, through which American manufacturers can reach whatever demand there may be in the Paraguayan market.

This field is covered in detail in a 130-page report⁵ by Harold E. Everley, entitled, "Furniture Markets of Argentina, Uruguay, Paraguay, and Brazil."

⁴ Published by the Bureau of Foreign and Domestic Commerce as Special Agents Series No. 177. Sold by the Superintendent of Documents, Government Printing Office, for 25 cents.

⁵ Published by the Bureau of Foreign and Domestic Commerce as Special Agents Series No. 183. Sold by the Superintendent of Documents, Government Printing Office, for 20 cents.

JEWELRY.

Total imports, 1918, 1,499 gold pesos; from United States, 530 pesos; from Argentina, 833 pesos.

Though the jewelry market is small, these figures by no means represent the true extent of imports. There is no doubt whatever that local dealers manage to bring in most of their purchases without paying the import duties. Individuals who are able to buy high-grade jewelry are also accustomed to buying in Buenos Aires. However, high-class American plated ware is not shown in Asuncion shops and the writer has seen single rings on sale whose price would almost equal the official figure for a year's total imports of jewelry.

Cheaper grades of American watches are very popular, and wrist watches are coming into common use. Most of the more expensive watches sold are of French and Swiss make. American alarm clocks have a very good sale.

MUSICAL INSTRUMENTS.

Total imports, 1918, 13,285 gold pesos; from United States, 3,979 pesos; from Argentina, 4,801 pesos.

The Paraguayan people are very fond of music, but most of them are unable to buy anything but the cheaper instruments. The larger towns all have brass bands and Asuncion has several orchestras. The guitar is the favorite instrument of the lower classes, and the homes of the better to do usually possess a piano. In 1918, however, but 15 pianos were imported, 7 of which were bought directly from the United States and the remainder in Buenos Aires. Fifty-five phonographs were imported during the same year, nearly all of them from the United States. Small phonographs should have a rapidly increasing sale in Paraguay.

HARDWARE.

Total imports, 1918, 1,859,778 gold pesos; from United States, 797,340 pesos; from Argentina, 880,705 pesos.

The United States has gained an exceptional position in the Paraguayan market for hardware and allied lines, though in the official statistics Argentina is credited with a large share of hardware imports of American origin. Most of the iron and steel goods of Argentine manufacture used in Paraguay are the product of one large Anglo-Argentine plant in Buenos Aires.

In the matter of axes, machetes, and other cutting tools American goods have shown a clear superiority over rivals. American axes in particular have proven to be the only tools of the temper required for working with the extremely hard woods of the country. The reputation of American saws is also very high. Not only must cutting and sawing tools but also nails and screws be of a special temper for use with Paraguayan woods.

A hardware line of increasingly good prospects is that of wire, due to the demand for the wiring of cattle lands.

The market for machinery is limited mainly to the meat-packing, quebracho, and sugar-refining plants.

MOTOR VEHICLES.

The field for the sale of motor vehicles is greatly restricted, due to the poverty of the country, the high price of gasoline, and the absence of roads suitable for automobile traffic. Until recently light-weight and inexpensive cars of American make have had a virtual monopoly of the Paraguayan market for motor cars, but American cars of higher grade are appearing in Asuncion and even in Concepcion. The import duty on motor cars amounts to 43½ per cent of the invoice value, but tractors and motor trucks are admitted free of duty.

During the period 1913 to May, 1919, inclusive, 306 motor vehicles in all were imported into Paraguay, of which 252 were imported directly from the United States. In the latter part of 1919 a consignment of over 200 light cars was received at Asuncion. Most of the cars imported are used for taxi service in Asuncion. In 1919 there were only 12 tractors in the Republic, but the high cost of fuel makes their operation very expensive. The same circumstance is an obstacle to the development of the market for motor boats and launches, for the use of which its splendid system of waterways so well fits the country. Most of the owners of motor cars and boats in Asuncion are organized in an auto club.

ELECTRICAL AND LIGHTING SUPPLIES.

Total imports, 1918, 67,098 gold pesos; from United States, 14,577 pesos; from Argentina, 44,724 pesos.

There are electric lighting plants in Asuncion, Villa Rica, Concepcion, Encarnacion, at the meat-packing and quebracho ports, at the Tebicuary sugar refinery, and at the lake town of San Bernardino.

There is an increasing demand in Asuncion for the better class of lighting fixtures, such as table lamps, chandeliers, and indirect-lighting bowls, and also for electric fans.

FIREARMS AND AMMUNITION.

Total imports, 1918, 45,325 gold pesos; from United States, 25,412 pesos; from Argentina, 14,094 pesos.

In the matter of revolvers two American brands have little competition. As a rule, the natives of the country districts prefer a long nickeled-barrel gun to the shorter automatic type, while the Paraguayan of the towns prefers a shorter weapon that will escape the eye of the police. It is common in Paraguay to find a peon carrying an expensive revolver whose cost is far out of proportion to his earning capacity. American hunting rifles also have a good standing among Paraguayans, though American makes of shotguns are less well known among hunters. The army is equipped with the Mauser rifle.

DRUGS AND CHEMICALS.

Total imports, 1918, 455,889 gold pesos; from United States, 194,582 pesos; from Argentina, 170,484 pesos.

The United States holds an unusually strong position in this field. The market is well covered by several important firms, either directly from their home office or through Buenos Aires. One company in

particular handles the Paraguayan trade with great thoroughness from its Argentine branch.

Outside the few larger towns there is little sale for imported drugs or medicines, as the natives of the country districts depend on homemade remedies. All imported patent drug preparations must be analyzed by a Government chemist before they can be put on sale to the public. Sale is permitted in case the results of the analysis agree with statement of contents given on the label of the package.

There are no general importing drug houses in Paraguay, but each pharmacy or drug store orders its own supplies from abroad. There are probably not over five stores in the country with a stock of \$100,000.

Imports of gasoline, which are classed in the Paraguayan statistics under the category of "Drugs and chemicals," amounted in 1918 to 359,910 kilos, nearly all of it from the United States. Most of this is consumed in automobiles, as few gas engines are used for other purposes.

NOTIONS, ETC.

Total imports, 1918, 625,382 gold pesos; from United States, 55,090 pesos; from Argentina, 325,878 pesos; from England, 117,852 pesos.

Under the general head of "Mercería" are included notions, paper and paper products, perfumery and toilet articles, toys, cotton, thread, etc.

The market for paper is covered in a 165-page report⁶ by Robert S. Barrett, entitled "Paper, Paper Products, and Printing Machinery in Argentina, Uruguay, and Paraguay." Imports of newsprint paper in 1918 amounted to 218,110 kilos, wrapping paper to 197,274 kilos, and book and writing paper to 95,517 kilos.⁷ Before the war Germany, Italy, and Spain supplied most of the Paraguayan demand, but since the beginning of the war most of the paper is imported from Argentina, much of it being of American manufacture. A large share of the newsprint still comes from Norway and Sweden.

The stationery market is still very small and the stationery sold is, as a rule, distinctly of low grade. This applies to office and school supplies as well as to stationery for social correspondence. However, there is a growing demand for a better quality in these lines and also for office devices and fixtures.

Good lines of perfumery and toilet articles are carried in Asuncion shops, with American products well represented, especially in the latter class of goods. A number of well-known French, Spanish, and English brands are also widely sold.

READY-MADE CLOTHING.

Total imports, 1918, 363,085 gold pesos; from United States, 51,238 pesos; from Argentina, 273,654 pesos.

This field is covered in detail in a report⁷ by American Consul Balch entitled "Market for ready-made clothing in Paraguay."

⁶ Published by the Bureau of Foreign and Domestic Commerce as Special Agent Series No. 163. Sold by the Superintendent of Documents, Government Printing Office, for 20 cents.

⁷ Published in Commerce Reports for February 28, 1920.

The trade in foreign ready-made clothing of all kinds is still very limited. This refers to both men's and women's goods. Suits for men are made by local tailors and women's clothing by modistas. This is true of even the ready-made suits sold in local stores. No serious attempt has been made to introduce high-grade lines of foreign goods, as is shown by the total imports of 22 wool and mixed-goods suits imported during the five years 1914 to 1918. The tariff on such clothing amounts to 62 per cent ad valorem. High-priced clothes are worn only by the better-to-do minority and by the foreigners resident in the country. The mass of the people necessarily wear a cheap class of clothing, usually purchased ready-made in local stores.

The long, hot season requires the wearing of light-weight clothing, duck and linen being the most commonly materials used. Light-weight American-made cloths for summer wear, such as Palm Beach, have not found their way into Paraguay.

Little underwear is imported, most of it being made at home or in local shops. However, a market could very probably be developed for light-weight American summer underwear. More than half of the hosiery imported into Paraguay is from the United States. The demand for a good quality of silk and cotton hosiery is growing rapidly. Whites, blacks, and grays are the colors desired. Here, as in all the better grades of clothing worn throughout Latin America, there is little market for bright colors.

TEXTILES.

Total imports for 1918, 3,635,844 gold pesos; from United States, 490,805 pesos; from England, 2,016,820; from Argentina, 403,061 pesos.

This field is covered in detail in a report^a by Louis S. Garry, entitled "Textile Markets of Argentina, Uruguay, and Paraguay."

The progress made by the United States in this field, in which British manufacturers have held so strong a position, is one of the most remarkable developments in American trade efforts in the Paraguayan market.

^a Published by the Bureau of Foreign and Domestic Commerce as Special Agents Series No. 194. Sold by the Superintendent of Documents, Government Printing Office, for 20 cents.

INVESTMENTS.

FACTORS AFFECTING INVESTMENTS.

Most of the factors which determine the conditions under which investments are made in Paraguay—the attitude of the people toward foreigners and foreign capital, the political situation, taxation, labor, the money and exchange situation, and the prospect of profitable return on capital—have been considered under other headings. As regards the first of these factors, the responsible leaders of the country are as a rule favorable to foreign capital. In certain cases this is perhaps through motives of self interest, where the persons have profited more or less directly from the introduction of such capital; generally it is through a realization of the need of foreign money to develop the nation's resources. The usual reason given by the Paraguayan for the backward state of his country's development is the "falta de brazos y capitales"—the lack of "arms" or population and of capital.

In his speech to Congress in 1917 President Franco said: "Bad money, scarcity of capital, the deficiency of agrarian legislation, the lack of roads, and many other circumstances constitute insuperable obstacles to a solid development of our economic life." The natives themselves are, however, reluctant to put their money into industrial enterprises, or into public utilities or bonds, but prefer to invest it in land or cattle. The great mass of the Paraguayan people are very provincially minded, and, while not positively hostile to the foreigner, are somewhat disposed to blame the "gringo" for the increased cost of living and for other conditions of the newer and less easy-going régime of the present. In normal times their general apathy prevents this feeling from being a serious obstacle to foreign enterprises, but it might offer a dangerous field for an antiforeign politician to work on.

Taxation is light in Paraguay and some enterprises are exempted by their concessions from all direct taxes during the initial period of operation. However, industries which show comfortable profits quickly attract the attention of the national budget makers. A bill was introduced into Congress in 1919 providing for a graduated tax on all joint-stock companies operating in the country, whether registered under Paraguayan law or incorporated abroad. The tax was to be levied at the rate of 0.50 peso gold per 1,000 pesos of capital stock on all companies capitalized between 50,000 and 100,000 gold pesos, and increased to a rate of 1 peso per 1,000 on those companies with a capital of more than 1,000,000 pesos. The bill was debated with great interest both inside and outside of Congress, but finally failed of passage.

EXTENT OF INVESTMENTS.

At the beginning of 1917 the capital invested in joint-stock companies (*sociedades anónimas*) registered in Paraguay was as follows:

| Character of business. | Com- panies. | Capital represented. | | | |
|--|-----------------|----------------------|-----------------|----------------|-----------------|
| | | Nominal. | | Paid up. | |
| | | Gold pesos. | Paper pesos. | Gold pesos. | Paper pesos. |
| Industries exploiting national products..... | 34 | 21,730,000 | 5,000,000 | 10,290,645 | 4,130,000 |
| Industries which work up imported materials..... | 4 | 1,700,000 | 100,000 | 1,400,000 | 60,000 |
| General commercial companies..... | 31 | 4,159,000 | 24,679,000 | 3,146,000 | 17,368,500 |
| Institutions of credit..... | 5 | 20,000,000 | 52,500,000 | 4,000,000 | 32,314,900 |
| Insurance companies..... | 1 | ..... | 5,000,000 | ..... | 5,000,000 |
| Transportation companies..... | 5 | 15,500,000 | 1,015,000 | 15,400,000 | 615,000 |
| Total..... | 80 | 63,089,000 | 88,294,000 | 34,236,645 | 59,488,400 |

During 1917 and 1918 there were registered new companies with capital to the extent of 16,097,251 gold pesos and 40,169,347 paper pesos, bringing the above totals to 50,333,896 and 99,097,251 pesos, respectively. These figures do not represent the investments of individuals or ordinary partnership firms, or of foreign companies operating in Paraguay but not registered in the country. In the latter category are the three quebracho companies of Puerto Sastre, Puerto Guarani, and Puerto Galileo, the Domingo Barthe Co., and the two principal river navigation companies.

NATIONALITY OF INVESTMENTS.

It would be impossible to give more than an approximate estimate of the share of each nationality in the capital invested in Paraguay. This is not only because of the international character of some of the companies engaged in the country, but also because of the difficulty in determining the true nationality of much Argentine capital.

The Argentine interests operating in Paraguay were organized several years ago in Buenos Aires as the "Centro de Establecimientos Forestales y Ganaderos del Paraguay." A memorial of this society, issued in 1912, declared that the total Argentine investments in Paraguay then amounted to over 30,000,000 gold pesos. At that time most of the land in the Chaco was held by Argentine interests. Argentine holdings still hold first place in the Chaco, and there are large Argentine properties in southern Paraguay. The cosmopolitan character of the Argentine interests working in Paraguay is illustrated by an examination of the list of directors of the above organization, which includes names like Taullard, Wheeler, Bancalari, Frangenheim, and Casado. The Asuncion Light & Tramway Co. has also been acquired by Argentine interests of Italo-Swiss origin.

British capital in Paraguay is invested in the external debt, in the Central Paraguay Railway, in the great yerba company, La Industrial Paraguaya, and in lands and cattle.

French capital is largely invested in banks, particularly the Banco de la República, and in cattle lands. The most important French property of the latter kind is the vast territory of the Société Foncière.

Investments of German capital in Paraguay have never been large. They are largely represented by commercial and colonization enterprises, though there is some German money in cattle and timber lands.

The combined capitalization of the three American meat-packing and quebracho companies operating in Paraguay is 4,400,000 gold pesos, but this figure by no means represents the actual value of the investments made by these companies, particularly by the International Products Co.

BANKS AND BANKING.

LIST OF THE BANKS.

There are eight banks in all in Paraguay, or nine, if the Oficina de Cambios, or Government Conversion Office, be included in the list. They are as follows:

- Banco de la Repùblica.
- Banco Mercantil del Paraguay.
- Banco Agrícola del Paraguay.
- Banco de España y del Paraguay.
- Banco de Crédito Comercial.
- Banco Constructor del Paraguay.
- Agencia Industrial y Comercial del Paraguay.
- Banco de Londres y del Rio de la Plata.

The following is a consolidated statement of all these banks drawn up at the end of each year during the period 1915 to 1918, a part of which is expressed in Argentine gold and a part in Paraguayan paper pesos:

ARGENTINE GOLD PESOS.

| Items. | 1915 | 1916 | 1917 | 1918 |
|--------------------------|-----------|-----------|-----------|-----------|
| Paid-up capital..... | 4,629,244 | 4,668,909 | 4,759,528 | 4,838,194 |
| Reserves..... | 1,232,974 | 1,411,593 | 1,469,537 | 1,500,363 |
| Deposits..... | 1,205,887 | 1,530,974 | 2,195,515 | 4,164,798 |
| Loans and discounts..... | 7,428,376 | 7,326,697 | 7,093,096 | 7,176,902 |
| Cash on hand..... | 1,651,778 | 1,842,980 | 2,530,601 | 4,723,482 |
| Savings accounts..... | 251,680 | 306,809 | 472,438 | 1,127,737 |

PARAGUAYAN PAPER PESOS.

| | | | | |
|--------------------------|-------------|-------------|-------------|-------------|
| Paid-up capital..... | 55,184,397 | 78,278,268 | 83,112,368 | 83,464,129 |
| Reserves..... | 18,102,102 | 19,163,864 | 25,875,131 | 20,570,185 |
| Deposits..... | 114,130,586 | 131,071,325 | 134,654,724 | 126,059,523 |
| Loans and discounts..... | 115,671,483 | 143,636,851 | 153,874,311 | 174,228,512 |
| Cash on hand..... | 49,839,155 | 65,146,466 | 65,437,280 | 59,935,945 |
| Savings accounts..... | 32,919,532 | 38,630,113 | 39,700,332 | 43,279,713 |

That part of the statement represented in Paraguayan currency is a fluctuating quantity which represents no fixed equivalent in gold.

The British Banco de Londres y del Rio de la Plata opened a branch in Asuncion in January, 1920. In spite of the large American interests in Paraguay, no American bank has yet taken steps to enter the banking field in this country.

A more detailed account of each of the Paraguayan banks appears below.

BANCO DE LA REPÙBLICA.

This is the most important bank in Paraguay. It was created by a law of December 26, 1907, and was founded by interests connected

with the Banco Frances del Rio de la Plata. Its charter endowed it with many of the functions of a Government bank, including: (1) The right to issue notes redeemable on presentation at a fixed ratio to the gold peso; (2) to issue stock; (3) to be sole depositary of all Government funds, including the national conversion fund; (4) to be the fiscal agent of the Government within the Republic and in foreign countries; (5) to open a mortgage department, with the privilege of issuing cedulas; (6) to establish a savings department. This charter gave it a position of extraordinary strength with relation to control over the finances of the State, and would have enabled it to utilize its unusual status to the advantage of the strong business interests which it represented by exerting a decisive control over the exchange. However, by law of September 25, 1914, its relations to the Government were considerably modified.

The president of the bank is Mauricio Berthomier, who is also president of the Molino Nacional, an important milling and exporting company. The manager is Edmundo Tombeur. The local directorate includes members of the firms of Rius y Jorba, Censi y Pirotta, and Angulo y Cia. The " junta consultativa," or advisory board of directors, in Buenos Aires consists of the chief officials of the Banco Frances del Rio de la Plata. The only branch of the bank is in Encarnacion.

According to the balance of December 31, 1918, the financial position of the bank was as follows:

| Items. | Argentine gold pesos. | Para-guayan paper pesos. | Items. | Argentine gold pesos. | Para-guayan paper pesos. |
|---------------|-----------------------|--------------------------|--------------------------|-----------------------|--------------------------|
| Capital..... | 4,000,000 | | Loans and discounts..... | 3,870,327 | 27,968,481 |
| Reserves..... | 1,500,363 | 300,000 | Cash on hand..... | 2,344,509 | 25,937,637 |
| Deposits..... | 1,781,518 | 44,696,403 | Savings accounts..... | 203,242 | 4,313,564 |

BANCO MERCANTIL DEL PARAGUAY.

This is the oldest of the existing banks in Paraguay, having been founded in 1890. It does over half of the commercial banking business of the country. It is the local representative of the Corporation of Foreign Bondholders, of London, through which are distributed to the holders of the external loan the installment paid into the bank from the Paraguayan Treasury. The bank has paid dividends to its stockholders ranging from 12 to 37 per cent, the latter dividend being distributed in 1915. In 1911 the dividend declared amounted to only 4 per cent.

The administration of the bank is in the hands of three directors, Antonio Plate, Rodney B. Croskey, and J. A. Vuyk, and of a council of administration consisting of eight members. The president of the council is Juan B. Gaona, a National Senator, and there are also represented on the council members of the firms of Gomez y Cia., Federico Krauch y Cia., Sebastian Brun y Cia., Urrutia, Ugarte y Cia., and Jorge Casaccia e Hijos.

The bank has branches in Concepcion, Villa Rica, Encarnacion, Paraguari, and Pilar.

Summary of balance on December 31, 1918:

| Items. | Gold pesos. | Paraguayan paper pesos. | Items. | Gold pesos. | Paraguayan paper pesos. |
|---------------|-------------|-------------------------|--------------------------|-------------|-------------------------|
| Capital..... | | 25,000,000 | Loans and discounts..... | 2,585,605 | 85,486,686 |
| Reserves..... | | 14,100,000 | Cash on hand..... | 631,534 | 18,068,027 |
| Deposits..... | 1,464,563 | 54,710,557 | Savings accounts..... | 675,780 | 31,863,600 |

The "movimiento general," or total business done by the bank during 1918 amounted to 7,252,084,657 paper pesos, as against 6,333,513,370 pesos for 1917. The bank suffered severely from the rapid fall in exchange during the latter part of the year, and was forced to draw on its "exchange reserve" to meet the situation.

BANCO DE ESPAÑA Y DEL PARAGUAY.

This bank was opened in July, 1913, as a branch of the Banco de España y América. The interests represented in its administration and directorate are largely Spanish merchants established in Paraguay, such as the firm of Perez y Sanjurjo, and the bank is an important factor in promoting commercial relations between Spain and Paraguay. It is a progressive and well-managed institution.

The bank has a branch in San Ignacio de Misiones.

Summary of balance on December 31, 1918:

| Items. | Gold pesos. | Paraguayan paper pesos. | Items. | Gold pesos. | Paraguayan paper pesos. |
|----------------|-------------|-------------------------|--------------------------|-------------|-------------------------|
| Capital | | 8,948,000 | Loans and discounts..... | 718,162 | 29,950,218 |
| Reserves | | 880,422 | Cash on hand..... | 276,085 | 10,139,029 |
| Deposits..... | 754,626 | 22,917,717 | Savings accounts..... | 248,593 | 7,067,928 |

BANCO AGRÍCOLA DEL PARAGUAY.

The functions of this bank, which are primarily concerned with the agricultural and industrial development of the Republic, have been described at length under the heading of "Agriculture." Most of its banking operations consist of the making of loans for these purposes.

Summary of balance on December 31, 1918:

| Items. | Gold pesos. | Paraguayan paper pesos. | Items. | Gold pesos. | Paraguayan paper pesos. |
|---------------|-------------|-------------------------|--------------------------|-------------|-------------------------|
| Capital..... | | 34,590,097 | Loans and discounts..... | 1,631 | 25,578,810 |
| Reserves..... | | 1,734,137 | Cash on hand..... | 3,589 | 3,425,194 |
| Deposits..... | 4,600 | 2,494,328 | Savings accounts..... | | |

BANCO DE CRÉDITO COMERCIAL.

This small institution does general banking. Its commercial department carries on a real-estate business and general mortgage

and loan operations. Its "monte pio" section makes loans on the security of jewelry and silver.

The bank, which was formerly known as the "Caja de Crédito Comercial," was founded in 1900, and has a branch in Encarnacion.

Summary of balance on December 31, 1918:

| Items. | Paraguayan paper pesos. | Items. | Paraguayan paper pesos. |
|---------------|-------------------------|--------------------------|-------------------------|
| Capital..... | 1,550,032 | Loans and discounts..... | 2,341,674 |
| Reserves..... | 135,125 | Cash on hand..... | 267,755 |
| Deposits..... | 1,062,582 | Savings accounts..... | ..... |

BANCO CONSTRUCTOR DEL PARAGUAY.

This is essentially a "building and loan" bank, but, besides making loans for building purposes, it handles a general banking business and does an insurance, commission, and exporting and importing business.

Summary of balance on December 31, 1918:

| Items. | Gold pesos. | Paraguayan paper pesos. | Items. | Gold pesos. | Paraguayan paper pesos. |
|---------------|-------------|-------------------------|--------------------------|-------------|-------------------------|
| Capital..... | | 1,977,000 | Loans and discounts..... | | 2,593,440 |
| Reserves..... | | 80,000 | Cash on hand..... | 2,967 | 1,317 |
| Deposits..... | | 62,956 | | | |

AGENCIA INDUSTRIAL Y COMERCIAL DEL PARAGUAY.

This bank was opened in Villa Rica in 1918. It does general banking and an exchange, commission, and loan and mortgage business. It also acts as administrator of properties.

Summary of balance on December 31, 1918:

| Items. | Gold pesos. | Paraguayan paper pesos. | Items. | Gold pesos. | Paraguayan paper pesos. |
|---------------|-------------|-------------------------|--------------------------|-------------|-------------------------|
| Capital..... | | 1,363,000 | Loans and discounts..... | 1,177 | 296,083 |
| Reserves..... | | 31,813 | Cash on hand..... | 1,599 | 606,504 |
| Deposits..... | 411 | 115,000 | Savings accounts..... | 122 | 35,220 |

OFICINA DE CAMBIOS.

The organization and functions of this Government institution are described under the subject of "Exchange."

Summary of balance on December 31, 1918:

| Items. | Gold pesos. | Paraguayan paper pesos. | Items. | Gold pesos. | Paraguayan paper pesos. |
|---------------|-------------|-------------------------|--------------------------|-------------|-------------------------|
| Capital..... | 830,194 | 10,000,000 | Loans and discounts..... | 1,563,199 | 11,120 |
| Reserves..... | | 3,308,688 | Cash on hand..... | | 1,489,842 |
| Deposits..... | 159,070 | ..... |  |  |  |

MONEY AND EXCHANGE.

CURRENCY.

An unusually important factor in determining the conditions of business in Paraguay is the remarkable exchange situation which results from the instability of the national currency.

This currency consists of unredeemable paper, issued in denominations of 50 centavos to 1,000 pesos. Not only has this money suffered a great depreciation in value, but its physical appearance, generally in an advanced state of dissolution, is a discredit to the nation which uses it as a circulating medium. The very handling of the money leaves in the mind of the foreigner who visits the country an unfavorable impression of the Republic's financial stability. Former issues of metallic currency have entirely disappeared from circulation, leaving only paper bills.

The amount of Paraguayan money in circulation at the end of each year during the period 1906 to 1918 was as follows, the increase representing the successive emissions:

| | Paper pesos. |
|----------------|--------------------------|
| 1906-1911..... | 35,000,000 |
| 1912..... | 64,000,000 |
| 1913..... | 65,000,000 |
| 1914..... | 90,000,000 |
| 1915..... | ^a 115,000,000 |
| 1916-1918..... | ^b 125,000,000 |

The proportion between the amount of the circulating medium held by the banks and that in circulation at the end of each of the five years of the period 1914 to 1918 was as follows:

| Years. | In banks. | | In circulation. | | Total. |
|------------|---------------------|------------------|---------------------|------------------|---------------------|
| | Amount. | Proportion. | Amount. | Proportion. | |
| 1914..... | <i>Paper pesos.</i> | <i>Per cent.</i> | <i>Paper pesos.</i> | <i>Per cent.</i> | <i>Paper pesos.</i> |
| 30,442,019 | 33.80 | 59,557,981 | 66.20 | 90,000,000 | |
| 49,859,155 | 43.36 | 65,140,845 | 56.64 | 115,000,000 | |
| 65,146,466 | 52.11 | 59,853,534 | 47.89 | 125,000,000 | |
| 65,437,280 | 52.35 | 59,582,720 | 47.65 | 125,000,000 | |
| 59,935,945 | 47.95 | 65,064,055 | 52.05 | 125,000,000 | |

* Fifteen million of the issue of this year was used to increase the capital of the Banco Agricola.

^b The 10,000,000 pesos of the issue of 1916 was assigned to the Oficina de Cambios.

The known supply of minted gold held in Paraguay at the same period was as follows, classified according as it existed in the Oficina de Cambios or in the banks:

| Years. | Oficina de Cambios. | Banks. | Total. |
|-----------|---------------------|--------------------|--------------------|
| | <i>Gold pesos.</i> | <i>Gold pesos.</i> | <i>Gold pesos.</i> |
| 1914..... | 757,827 | 551,270 | 1,309,097 |
| 1915..... | 757,827 | 893,951 | 1,651,778 |
| 1916..... | 470,348 | 1,172,632 | 1,642,980 |
| 1917..... | 1,010,046 | 1,520,555 | 2,530,601 |
| 1918..... | 1,463,199 | 3,260,233 | 4,723,432 |

The 757,827 pesos credited to the Oficina de Cambios for 1914 and 1915 in reality represents the amount of the conversion fund then existing. Of this fund all save 157,827 pesos was assigned to the Oficina at the time of its foundation in 1916.

EXCHANGE.

For all practical purposes exchange in Paraguay is a question of the daily ratio fixed between the Paraguayan peso and the Argentine gold and paper pesos. The extraordinary position held by Argentina in relation to Paraguay accounts for the unusual connection existing between the currencies of the two countries. Ordinary mercantile transactions in Paraguay are made in the national paper, in terms of which the native Paraguayan is accustomed to calculate the value of everything. Thus he buys and sells in terms of the paper peso of the country and his wages are paid in the same medium. On the other hand, most of the large scale operations are carried on in Argentine currency. Land sales, when they represent the exchange of large tracts, are made on the basis of the gold peso, and cattle are bought and sold in Argentine paper. Export and import duties are collected in terms of gold pesos. The foreign business of the country is conducted in gold, and the foreign companies operating in Paraguay, such as the railway and the packing and quebracho companies, work on the same basis. The higher salaried foreign employees of these companies are paid on the basis of a fixed gold rate.

The fact that the business of the Republic is carried on in two currencies creates an unusual exchange situation which depends on the momentary balance existing between the demand for the one and the other of the two currencies. As a consequence there exists a real money market, in which Paraguayan pesos are sold against Argentine pesos. The resultant of offers and demands in this market establishes the daily "tipo," or rate, on the basis of which business is conducted until the following day. Although there are really three different units in the situation—the Paraguayan peso and the Argentine gold and paper peso—the gold peso does not circulate, but only serves as a standard for the final settling of values. The value of the Argentine gold peso expressed in American gold is \$0.9648. The value of the Argentine paper peso is 44 per cent of the gold peso, or \$0.4246.

In spite of the fact that for immediate practical purposes exchange is reduced to the interchange of the two paper currencies, banks are forced to keep their books in terms of all three units, and business houses whose operations are on an international scale are compelled to do likewise. Values in gold pesos are usually expressed by the abbreviation o/s (oro sellado) placed after the corresponding figures. Those in Argentine paper are denoted by the abbreviation m/n (moneda nacional), and Paraguayan pesos by the mark c/l (curso legal).

RATES OF EXCHANGE.

There are three different rates of exchange, one of which is fixed by the Asuncion Bolsa, or Board of Trade, another by the Ministry of Finance, and a third by the Oficina de Cambios, or Government Conversion Office. Business in general is conducted on the basis of the rate fixed by the Bolsa. This rate is quoted in terms of Argentine paper, as, for example, "850," representing a ratio of 8.50 Paraguayan pesos to 1 Argentine. That of the Ministry of Finance is expressed in terms of the ratio between the Paraguayan peso and the gold peso, as, for example, "1932," or 19.32 c/l for 1 o/s. All public payments, such as import and export duties, are made in accordance with the latter rate. The Oficina de Cambios only quotes a rate when it is buying and selling gold.

There are two distinct tendencies evident in the movement of Paraguayan exchange. One consists of the daily fluctuations in the value of the national peso, up one day and down the next, according to the factors operating for the moment on the local money market. The other is the resultant of these fluctuations over a relatively long period of time, and represents in one direction the valorization of the Paraguayan peso and in the other its devalorization.

These fluctuations are normally determined by the momentary excess of demand for one currency or the other. For example, the closing of a large transaction which involved the acquisition of an unusual quantity of Argentine paper would quickly force up the rate on "Argentines." The simultaneous maturing of large sums of foreign obligations would have the same effect, as would also the prospect of a shutdown by one of the packing plants. On the other hand, the bringing in of a large amount of Argentine paper by one of the packing companies tends to lower the rate on "Argentines." As a matter of fact, this has been a source of serious losses to the companies in question.

The exchange is also very sensitive to political crises, such as that produced by the death of President Franco in June, 1919. The trend of the other phase of the exchange movement is determined by the larger influences at work in the country, such as the development of new and important industries, like that of meat packing, the annual balances between imports and exports, and the growth or decline of confidence in the Government, especially as regards its financial policy. For instance, the prospect of a large issue of paper to meet a deficit in the annual budget would inevitably produce a downward movement in the money of the country.

FLUCTUATIONS IN EXCHANGE RATES.

The course of both of these tendencies in exchange is illustrated by the following table, which represents the ratio between the Paraguayan peso and the gold peso for the period 1893 to 1918:

| Years. | Minimum rate. | Maximum rate. | Total circulation. | Years. | Minimum rate. | Maximum rate. | Total circulation. |
|-----------|---------------|---------------|---------------------|---------------------|---------------|---------------|---------------------|
| | | | <i>Paper pesos.</i> | | | | <i>Paper pesos.</i> |
| 1893..... | 5.38 | 6.50 | | 1907..... | 10.40 | 12.80 | 35,000,000 |
| 1894..... | 5.17 | 7.67 | | 1908..... | 12.80 | 17.50 | 35,000,000 |
| 1895..... | 5.65 | 6.80 | | 1909..... | 13.80 | 18.30 | 35,000,000 |
| 1896..... | 6.05 | 6.15 | | 1910..... | 12.60 | 16.00 | 35,000,000 |
| 1897..... | 6.05 | 6.96 | | 1911..... | 12.30 | 14.00 | 35,000,000 |
| 1898..... | 6.75 | 7.85 | | 1912..... | 14.50 | 17.50 | 64,000,000 |
| 1899..... | 6.48 | 8.15 | | 1913..... | 15.00 | 16.90 | 65,000,000 |
| 1900..... | 7.88 | 8.50 | | 1914..... | 17.00 | 23.00 | 90,000,000 |
| 1901..... | 7.90 | 9.22 | | 1915..... | 35.00 | 42.60 | 115,000,000 |
| 1902..... | 8.40 | 10.22 | | 1916..... | 25.00 | 39.54 | 125,000,000 |
| 1903..... | 8.75 | 11.10 | | 1917..... | 33.29 | 38.40 | 125,000,000 |
| 1904..... | 8.75 | 13.50 | | 1918..... | 18.17 | 35.31 | 125,000,000 |
| 1905..... | 10.20 | 11.00 | | 1919 (9 months).... | 16.16 | 20.71 | 125,000,000 |
| 1906..... | 10.05 | 11.50 | 35,000,000 | | | | |

Thus for many years there was taking place a gradual decline in the value of the Paraguayan peso. This was arrested for short periods, but was accelerated to the degree of a panic by circumstances growing out of the war—the sudden demand for the liquidation of foreign debts with gold and the fall in importations.

The more recent tendency to a rise in the value of the Paraguayan peso can be ascribed to the introduction of large quantities of Argentine paper by the three American packing companies, amounting to over 800,000 pesos per month, to the development of a favorable balance of trade, and to the growing confidence which business came to feel in the financial policy of President Franco.

The peso, which was worth about \$0.12 in 1905, \$0.056 in 1909, and \$0.024 in 1915, is now (November, 1919) worth about \$0.052.

The variations of the rate within a single year are illustrated by the following table, which gives the maximum, minimum, and average ratio between the paper and gold pesos for each month of 1918 and for the first nine months of 1919:

| Months. | Maximum. | | Minimum. | | Average. | |
|----------------|----------|-------|----------|-------|----------|-------|
| | 1918 | 1919 | 1918 | 1919 | 1918 | 1919 |
| January..... | 35.31 | 19.09 | 34.17 | 16.16 | 34.33 | 17.94 |
| February..... | 34.36 | 18.87 | 34.00 | 17.47 | 34.20 | 18.03 |
| March..... | 33.90 | 18.86 | 29.80 | 18.13 | 31.79 | 18.43 |
| April..... | 29.86 | 18.25 | 25.22 | 17.80 | 27.29 | 17.82 |
| May..... | 25.30 | 19.81 | 24.95 | 17.32 | 25.02 | 18.03 |
| June..... | 28.67 | 20.71 | 25.22 | 18.59 | 26.21 | 19.19 |
| July..... | 27.73 | 19.18 | 26.93 | 18.61 | 27.36 | 18.86 |
| August..... | 27.26 | 19.31 | 26.83 | 18.88 | 27.15 | 19.07 |
| September..... | 26.82 | 19.88 | 25.94 | 19.46 | 26.33 | 19.54 |
| October..... | 25.89 | ..... | 25.00 | ..... | 25.29 | ..... |
| November..... | 25.09 | ..... | 23.40 | 18.17 | 24.72 | ..... |
| December..... | 23.40 | ..... | 18.17 | ..... | 21.36 | ..... |

The range of daily fluctuations within a month is illustrated by the following table of rates on Argentine paper for October, 1919:

| Day. | Rate. | Day. | Rate. | Day. | Rate. |
|------|-------|------|-------|------|-------|
| 1. | 8.58 | 11. | 8.53 | 22. | 8.50 |
| 2. | 8.57 | 13. | 8.50 | 23. | 8.43 |
| 3. | 8.53 | 14. | 8.46 | 24. | 8.545 |
| 4. | 8.48 | 15. | 8.45 | 25. | 8.59 |
| 6. | 8.39 | 16. | 8.45 | 27. | 8.62 |
| 7. | 8.37 | 17. | 8.43 | 28. | 8.69 |
| 8. | 8.41 | 18. | 8.43 | 29. | 8.66 |
| 9. | 8.41 | 20. | 8.44 | 30. | 8.61 |
| 10. | 8.41 | 21. | 8.48 | 31. | 8.57 |

In eight days of May, 1919, the extremes of the rate varied over 100 points, and in two days, between June 17 and 19, the rate rose from 831 to 911.

EFFECTS OF MONETARY SITUATION ON BUSINESS.

The practical significance of such a situation is apparent at once. It necessarily puts business on a speculative basis. Both costs and receipts are at the mercy of the "tipo," or daily rate, and business houses are forced to guard against a turn in the exchange that might affect them unfavorably on either side of the ledger.

A firm that faces the necessity of meeting a large foreign draft on a given date naturally plans to anticipate its maturity by acquiring beforehand at as favorable a rate as possible the gold required to clear the account. For example, a purchase of 1,000 gold pesos' worth of goods bought to-day (November, 1919) on three months' time at present represents a value of 19,330 paper pesos. However, at maturity it may amount to 25,000 paper pesos, though, on the other hand, it may amount to only 12,000 paper pesos. A house which anticipates making large purchases of tobacco at a certain time, or a company which must pay out a large amount in wages on a particular day, will buy the necessary paper in advance at as low a rate as possible.

The reverse of this phase of the question is the custom among merchants of adding a certain percentage to what would normally be a satisfactory profit, in order to safeguard themselves against a fall in the value of the paper peso. Within reasonable bounds both these procedures are an entirely legitimate recourse against the possible consequences of a shift in the exchange that might destroy all calculations of profit, or even leave the persons concerned facing a positive loss. At the most they are the logical outcome of the state of the national money. As such they can neither be classed as ordinary speculation on the one hand nor as extortion on the other.

BUYING AND SELLING OF EXCHANGE.

There are operations of another category that are not dictated so much by the need of covering business against a probable loss as by the expectation or certainty of profiting from deals in exchange itself. This form of exchange brokerage is an additional disturbing factor in a money market that is already chronically unsettled.

Furthermore, the aggregate of the daily transactions is relatively so small and the means of the Government for counteracting such speculative operations so limited that a few powerful local interests are in a position to influence the daily rate in accordance with their needs for the moment. The temptation to use this power in the exchange market has often proven too great to resist, and it is moreover difficult to draw the line between where the legitimate forces of demand and supply work in determining the rate and where downright manipulation for private advantage begins. When it is to the interest of one of the groups in question to obtain a large quantity of Paraguayan pesos, brokers working in their behalf make fictitious sales of this money on the Bolsa, in order to create the appearance of a real demand for Argentine paper, with the result that a high rate is declared for the day. In the process every device possible would be resorted to in order to depress the money which it was desired to buy. Much more money has been made in Paraguay in this way and by ordinary speculation on the rate than a healthy monetary system would permit.

As for the other phase of the question—the effect on prices—it has been to raise them to the highest scale prevailing in any South American country. Of course, other causes are operative here, such as the high freights from the River Plate ports and the fact that some goods pay a double import duty, Argentine and Paraguayan. The extra percentage which merchants add to their costs as exchange insurance against a fall in the paper peso may amount to 50 per cent or more, a margin that is sufficient to cover them against any unfavorable turn in the situation short of a real panic. Local tradesmen not only follow this custom when marking a new consignment of goods, but they are quick to increase the safety zone about their profits whenever the rate on paper begins to show a downward tendency.

It is this factor of the problem that most immediately affects the average Paraguayan consumer. In the case of the laboring class the doubling of the value of the paper peso within a year would have greatly improved its condition by doubling the buying power of wages, but this advantage has gradually been offset by a correspondingly greater rise in prices, into which other factors besides exchange have entered. Strikes, with resulting increases of wages, have been the natural consequence of the effort to keep the balance.

Except within the limited circle who profit directly from operations in exchange, there is a general recognition in Paraguay of the urgent need of stabilizing the national currency. The editor of the Revista del Comercio of Asuncion wrote in February, 1919, as follows: "It is indeed time that this disturbing problem of the exchange should be settled. It acts in a double sense as cause and effect over our national economy, serving to discredit the country and as a source of loss to the healthiest productive activities. In the face of the fluctuations of the exchange more than one foreign firm interested in business in Paraguay has asked: How is it possible to carry on business in this country with such a lack of stability in the money?"

The money being a fiat currency, without metallic guaranty behind it, can inspire no confidence in itself, and whatever credit it may possess at a given time is expressed by the monetary ratio of

its convertibility into the "moneda sana," or "healthy money," of Argentina. Though there can be no absolute fixation of this ratio, the aim of the Paraguayan leaders in the matter is to establish a standard rate, around which fluctuations will be reduced to the minimum of points determined by the state of the country's balance of trade. However, even among the minority who understand the principal factors involved in the question there has been no agreement as to either the proper conversion rate or as to the means of fixing such a rate.

OFICINA DE CAMBIOS.

The only positive effort toward monetary reform is represented by the creation of the Oficina de Cambios in 1916. This institution was established with the express purpose of maintaining a fixed ratio between the paper peso and the gold peso. It was hoped thereby to accomplish the same results for Paraguayan money as had been brought about in Argentina by the Caja de Conversión founded by the Pellegrini Government.

Law No. 182 of January 28, 1916, which created the Oficina, declared its functions to be (1) the buying and selling of gold, and (2) the emission, exchange, and conversion of bills. In connection with the first of these functions it was authorized to establish deposits of gold outside the country, against which it could issue drafts, and it was empowered to accept advances on the account of the resources assigned to it by the law creating it, when made in agreement with the Ministry of Finance.

ORGANIZATION AND FUNCTIONS.

For the buying of gold the Oficina de Cambios was endowed with the following resources in paper: (1) 10,000,000 pesos, representing the surplus of the emission of 1914, (2) certain available funds existing in the Banco Agrícola, and (3) the funds resulting from its own sales of gold. For the selling of gold the Oficina was to dispose of the following resources: (1) The proceeds in gold of the exportations made by the Banco Agrícola, (2) all Government revenues collected in gold, (3) the gold acquired through the action of this law, and (4) any other funds that might be assigned to it by subsequent laws. The National Treasury was authorized to draw against the Oficina, in gold or in paper at the current exchange rate for selling, to the limit of the income derived from the gold revenues mentioned above, and the Banco Agrícola was likewise authorized to draw against such funds as it was obliged to deposit in the Oficina.

In the execution of the second of its general functions the Oficina was charged with the retirement of the existing currency in exchange for a new emission. For this purpose it was to issue bills and nickel coins, whose value would be determined by the President of the Republic. In order to expedite this process, the law declared that all money of the existing issues that was not presented at the Oficina within two years after the work of conversion should be initiated would lose 50 per cent of its face value and after three years would no longer be legal tender.

For the purpose of retiring the old circulation the following funds were set aside: (1) 600,000 gold pesos of the conversion fund referred to in law No. 96 of September 25, 1914; (2) the export duty on hides of 1 gold peso per hide, to be available when the Government debt to the Banco de la República, to which this tax was already assigned, should be canceled; (3) the additional duties on hides created by law No. 172 of December 24, 1915; (4) the income from the loan authorized by the law of November 28, 1912; and (5) and other resources that might later be granted to the Oficina by law.

The date and rate at which conversion would take place were left to be fixed by subsequent legislation. In the meantime the Oficina might employ its conversion funds in its business of buying and selling gold. As soon as the Oficina should begin its work of conversion it was to give gold to anyone who would request it in exchange for paper. The paper pesos received in this way could not be returned to circulation except through the reverse process of exchanging them again for gold.

An important feature of the law refers to exports of hides, tobacco, yerba, and quebracho extract. In addition to the export duties already in force, exporters of these products were to deposit in the Oficina, in gold or in letters of not over 90 days' time, the equivalent of 20 per cent of the current market value of the shipments, receiving in exchange paper money at the Oficina's rate for sales of gold, less a sum which should not exceed 4 per cent of their value. By law No. 258, of September 22, 1917, the 20 per cent deposit was raised to 30 per cent.

A series of executive decrees have since been issued for the purpose of supplementing the provisions of the initial law described above. One ordered the transfer to the credit of the Oficina de Cambios of 757,827 gold pesos deposited in the Banco de la República, of which there should be credited to the National Treasury the sum of 157,827 pesos, in accordance with a previous law. Another decree ordered the transfer to the Oficina of the bills and other funds destined for exchange, which were kept in the internal-debt section of the Banco Agrícola, and authorized their use by the Oficina in carrying out the various functions assigned to it by law. In order to aid in the execution of the provision of the general law described in the preceding paragraph, customhouse authorities were required by another decree to refuse permits for the exportation of such goods unless accompanied by a document from either the Oficina or an agency of the Banco Agrícola showing that the requirement in question had been complied with by the shipper. A decree of May 1, 1916, supplementing law No. 193, regarding the establishment of a gold rate for the collection of Government revenues, declared that import duties and the so-called internal-service duties collected by the customhouses, as well as any tax which the person owing it might prefer to pay in paper, should be assessed at the exchange rate fixed by the Oficina.

OPERATIONS OF THE OFICINA DE CAMBIOS.

Of the two primary functions of the Oficina de Cambios, that of conversion has never been put into effect. It has only issued new

bills to replace old ones that were no longer in a state to circulate, and it has made a beginning of its other principal function—that of buying and selling gold for the purpose of steadyng the exchange.

The total transactions of the latter class carried out through the Oficina during 1918 were as follows:

| Months. | Bought. | Sold. | Months. | Bought. | Sold. |
|---------------|--------------------|--------------------|-----------------------------|--------------------|--------------------|
| | <i>Gold pesos.</i> | <i>Gold pesos.</i> | | <i>Gold pesos.</i> | <i>Gold pesos.</i> |
| January..... | 119,539 | 124,755 | September..... | 113,816 | 59,640 |
| February..... | 107,439 | 71,479 | October..... | 345,866 | 277,125 |
| March..... | 165,263 | 102,219 | November..... | 341,719 | 35,872 |
| April..... | 105,711 | 160,472 | December..... | 36 | 40,006 |
| May..... | 109,605 | 143,206 | Total, 1918 | 1,814,215 | 1,384,579 |
| June..... | 125,033 | 205,841 | 1917..... | 1,363,017 | 1,154,471 |
| July..... | 111,529 | 91,025 | 1916, May to December | 1,107,111 | 1,326,515 |
| August..... | 168,659 | 72,939 | | | |

The sales made on the local Bolsa during the same period were as follows, figures being given in both Argentine gold and paper:

| Months. | Argentine paper pesos. | Gold pesos. | Months. | Argentine paper pesos. | Gold pesos. |
|---------------|------------------------|-------------|-------------------------------|------------------------|-------------|
| January..... | 889,570 | 12,551 | September..... | 1,418,103 | ..... |
| February..... | 948,549 | 11,380 | October..... | 2,221,703 | ..... |
| March..... | 1,330,759 | ..... | November..... | 316,261 | ..... |
| April..... | 1,234,688 | ..... | December..... | 641,374 | ..... |
| May..... | 1,074,533 | ..... | Total, 1918 | 13,849,369 | 27,931 |
| June..... | 936,843 | 4,000 | 1917..... | 10,991,863 | 31,517 |
| July..... | 1,114,609 | ..... | 1916, March to December | 9,494,877 | 98,137 |
| August..... | 1,222,377 | ..... |  |  |  |

In its efforts to steady the exchange market the Oficina de Cambios sells gold when the rate is rising and buys when it is falling, selling drafts to those who require them for the settlement of foreign obligations, and accepting drafts presented by exporters for payment. Some persons, however, have bought drafts from the Oficina for the purpose of negotiating them at a profit on the local exchange market, thereby making the Oficina an unconscious promoter of the very tendency to speculation which it was intended to prevent. The intervention of the Oficina has undoubtedly been effective at times in holding the rate within bounds when there was a violent movement in either direction, but a heavy run on its gold soon forces it to suspend payments for fear of finding all its resources reduced to paper.

Because of its weakness in this critical respect the Oficina's rôle has been limited to that of a moderator, for the traditional forces at work on the exchange have so far proven beyond its power to control. Before it can undertake its real work of conversion by retiring the present circulation and substituting for it a new issue guaranteed by a fund of gold adequate for the purpose of maintaining its value, the Oficina must either wait until it has accumulated a sufficient reserve from the sources assigned to it, or it must be supplied with the necessary funds through the contraction of a loan abroad.

On November 6, 1919, the resources of the Oficina amounted to 524,520 gold pesos and 17,143,838 paper pesos, equivalent to over

1,380,000 gold pesos. About 500,000 pesos was in the form of a gold credit deposited in the Banco de la Nación in Buenos Aires.

The consensus of opinion among responsible Paraguayan authorities on the subject is that a fund of 2,500,000 gold pesos would furnish an adequate basis for undertaking the work of conversion. Though some favor the laissez faire policy of allowing a favorable balance of trade to create a gold surplus in the country sufficient for the purpose of definitely valorizing the national money, many favor resorting to a loan.

The "tipo," or rate, at which the value of the money should finally be fixed is another source of disagreement. On this point there come into conflict every element in the country—the National Treasury and the taxpayers, exporters and importers, debtors and creditors, wage earners and employers, cattlemen and packers. According to their interest, some favor a high rate and others a low one, while the speculative element, which profits from the disorder of the status quo, wants things left as they are. Some favor accepting as the rate for conversion that which happens to be in force on the day when the law of conversion is put into effect. On the other hand, the late President Franco favored the withdrawal at the fixed rate of 30 in exchange for a new guaranteed emission at the fixed rate of 15 pesos to 1 Argentine gold peso. This rate was selected as being the average rate of exchange for the period previous to the war, and represents a considerably higher value for the native peso than the balance of the current rates since the war would warrant.

PUBLIC FINANCES.

REVENUES.

An examination of the budget for the year 1919 will illustrate the customary sources of revenue of the Paraguayan Government. The resources on which the National Treasury counted for that year were as follows:

| Sources. | Gold pesos. | Paper pesos. |
|---|----------------|-----------------|
| CUSTOMS. | | |
| Importation: | | |
| General duties..... | | 40,000,000 |
| Slingage..... | | 3,300,000 |
| Storage..... | | 200,000 |
| Internal-revenue tax..... | | 300,000 |
| Additional..... | | 1,800,000 |
| Total..... | | 45,300,000 |
| Exportation: | | |
| Duties on yerba..... | 120,000 | |
| Duties on hides..... | 300,000 | |
| Duties on quebracho extract..... | 150,000 | |
| Duties on lumber..... | 120,000 | |
| Duties on unrevised tobacco..... | 5,000 | |
| Slingage..... | 50,000 | |
| Duty on exportation of cattle and on sales to frigorificos..... | 120,000 | |
| Additional..... | 45,000 | |
| Total..... | | 910,000 |
| INTERNAL SERVICE. | | |
| Storage..... | | 8,000 |
| Slingage..... | | 120,000 |
| Miscellaneous..... | | 15,000 |
| Total..... | | 143,000 |
| INTERNAL REVENUES. | | |
| Land tax..... | 6,000,000 | |
| Fines in connection with land tax..... | 250,000 | |
| Stamped paper..... | 1,500,000 | |
| Commercial stamps..... | 1,800,000 | |
| Stamped paper for fines..... | 125,000 | |
| Internal consumption stamps..... | 2,200,000 | |
| Sanitary licenses..... | 12,000 | |
| Inheritance tax..... | 1,000,000 | |
| Sanitary tax..... | 2,000 | 5,000 |
| Tax on alcoholic liquors..... | | 8,000,000 |
| Tax on public amusements..... | | 150,000 |
| Registry of trade-marks..... | | 300,000 |
| Tax on sale of cattle..... | 420,000 | |
| Tax on beer..... | | 380,000 |
| Tax on slaughter of cattle..... | | 2,000,000 |
| Miscellaneous..... | | 20,000 |
| Total..... | 422,000 | 23,742,000 |
| POST OFFICE AND TELEGRAPHS. | | |
| Postal money orders..... | | 1,000,000 |
| Box rent..... | | 30,000 |
| Parcel post..... | | 15,000 |
| Telegraph messages..... | | 1,500,000 |
| Miscellaneous..... | | 10,000 |
| Total..... | | 2,555,000 |

| Sources. | Gold pesos. | Paper pesos. |
|---------------------------------|-------------|--------------|
| OTHER ORDINARY SOURCES. | | |
| Consular fees..... | 22,000 | |
| Land sales..... | | 70,000 |
| Rent of lands..... | | 500,000 |
| Restitutions of lands..... | | 100,000 |
| Banking interest..... | | 60,000 |
| University fees..... | | 30,000 |
| Miscellaneous..... | | 220,000 |
| Total..... | 22,000 | 980,000 |
| EXTRAORDINARY SOURCES. | | |
| Sale of gunboat..... | | 1,240,000 |
| Other sources..... | | 900,000 |
| Total..... | | 2,140,000 |
| RÉSUMÉ. | | |
| Customs..... | 910,000 | 45,743,000 |
| Internal revenues..... | 422,000 | 23,742,000 |
| Post office and telegraphs..... | | 2,555,000 |
| Other ordinary sources..... | 22,000 | 980,000 |
| Extraordinary sources..... | | 2,140,000 |
| Total..... | 1,354,000 | 75,160,000 |

A more detailed description of some of these taxes follows:

Slingage.—The slingage tax is levied on exported and imported goods which make use of the Government wharves, cranes, or peons, and is assessed at the rate of 2 gold centavos per 10 kilos (9 cents per 100 pounds) gross weight.

Land tax.—According to the national law of 1905, the rate of the land tax is fixed at one-half of 1 per cent of the official valuation of the property. Rural properties whose official valuation is less than 1,000 paper pesos are exempt from the tax. The valuation is fixed according to Departments. In Asuncion it is 10,000 paper pesos for the district of Recoleta, 5,000 pesos for that of Trinidad, and 1,000 pesos for that of Lambare. Outside the capital it ranges from 20 paper pesos per hectare for the Departments of Caaguazu and Curuguaty to 100 paper pesos for Luque and other Departments in the vicinity of Asuncion. For the Chaco the valuation is from 5 to 50 paper pesos, depending largely on distance from the Paraguay River.

Tax on consumption of foreign products.—This tax is levied in addition to the regular import duties and applies to such articles as tobaccos, matches, candies, preserves, perfumes, cosmetics, playing cards, mineral waters, and prepared medicines.

Sanitary taxes.—These taxes include licenses to practice medicine, dentistry, pharmacy, etc.; licenses for opening a pharmacy; fees for sanitary inspection of river steamers; disinfection of boats, merchandise, etc.; permits for sale of proprietary medicines.

Reduced to gold pesos, the income of the Government during 1915 and 1916 was as follows:

| | 1915 | 1916 |
|-------------------------------|--------------------|--------------------|
| Customs | <i>Gold pesos.</i> | <i>Gold pesos.</i> |
| Internal revenues | 1,272,121 | 2,025,163 |
| Post office and miscellaneous | 619,380 | 590,647 |
| Issue of paper money | 142,427 | 507,736 |
| Total | 1,141,023 | 364,574 |
| | 3,174,950 | 3,498,110 |

The total revenues for 1917 amounted to 3,557,504 gold pesos.

These figures illustrate two cardinal defects of the Paraguayan fiscal system. In the first place, too large a share of the revenues is derived from indirect taxation and too little from direct levies on real property. Paraguay, in common with other Spanish American Republics, inherited this custom from the colonial régime, and it is perpetuated by the undue influence of the small-property holding class in the National Congress. As a consequence the land tax is unreasonably small.

President Franco said in 1918: "In my judgment we should decrease the indirect taxes and increase the direct. In this way we shall require that the individual contribute to the public expenses in proportion to his economic capacity, instead of placing the burden almost exclusively on consumption, to the detriment of the poorer classes, as is now the case." In the second place, there is a too common tendency to resort to an issue of paper money when the ordinary revenues are not sufficient to meet the year's expenses. The 25,000,000 paper peso issue of 1915, when there was a marked falling off in the import duties, is an example of this procedure. A decline in importations at any time quickly places the Government in straits to meet its ordinary obligations. Recently there has been a strong movement on foot to increase the taxation of the different phases of the cattle industry. Much of the burden of such taxation really falls indirectly on the frigoríficos, in spite of the fact that they are free from taxation for a number of years in accordance with the terms of their concessions.

EXPENSES.

The budget for 1919 apportioned the year's expenses as follows:

| Services. | Gold pesos. | Paper pesos. |
|--|-------------|--------------|
| Congress | 900 | 2,669,200 |
| Ministry of the Interior | 146,347 | 22,272,300 |
| Ministry of Foreign Relations | 106,372 | 709,800 |
| Ministry of Finance | 9,425 | 11,061,560 |
| Ministry of Justice, Worship, and Public Instruction | 30,444 | 17,628,440 |
| Ministry of War and Marine | 117,774 | 18,703,470 |
| Public debt | 721,240 | 3,000,000 |
| Total | 1,132,502 | 76,034,770 |

Reduced to gold, the income and outgo of the Government during the period 1881 to 1914 was as follows:

| Years. | Revenues. | Expenses. | Years. | Revenues. | Expenses. |
|-----------|--------------------|--------------------|-----------|--------------------|--------------------|
| | <i>Gold pesos.</i> | <i>Gold pesos.</i> | | <i>Gold pesos.</i> | <i>Gold pesos.</i> |
| 1881..... | 811,166 | 773,396 | 1898..... | a 1,102,749 | 1,124,757 |
| 1882..... | 810,506 | 758,527 | 1899..... | a 1,176,453 | 1,153,883 |
| 1883..... | 550,243 | 776,705 | 1900..... | a 1,829,287 | 1,730,765 |
| 1884..... | 839,972 | 1,113,094 | 1901..... | 2,419,672 | 2,356,346 |
| 1885..... | 1,437,900 | 1,307,023 | 1902..... | 2,280,396 | 2,212,671 |
| 1886..... | 2,894,425 | 3,049,096 | 1903..... | 2,171,607 | 2,147,400 |
| 1887..... | 2,962,235 | 1,609,813 | 1904..... | 2,453,507 | 2,223,139 |
| 1888..... | 3,472,761 | 2,791,558 | 1905..... | 3,005,214 | 2,398,208 |
| 1889..... | 4,124,674 | 4,252,97 | 1906..... | 3,345,087 | 3,153,948 |
| 1890..... | 620,040 | 1,158,082 | 1907..... | 4,633,384 | 3,739,857 |
| 1891..... | 457,696 | 690,334 | 1908..... | 1,968,173 | 3,521,834 |
| 1892..... | 505,834 | 709,179 | 1909..... | 2,607,358 | 2,847,054 |
| 1893..... | 982,649 | 975,453 | 1910..... | 2,958,516 | (b) |
| 1894..... | a 802,591 | 878,278 | 1911..... | a 3,320,458 | 4,961,958 |
| 1895..... | 825,846 | 805,182 | 1912..... | a 4,052,559 | 3,816,425 |
| 1896..... | a 1,190,315 | 1,100,315 | 1913..... | 4,350,852 | 4,879,778 |
| 1897..... | a 1,443,771 | 1,376,406 | 1914..... | a 4,106,917 | 3,843,028 |

a Includes issues of paper pesos.

b Figures not available.

Fourteen of the 34 years included in the above table showed a deficit.

The revenues and expenses for the years 1915 to 1917 were as follows:

| Years. | Revenues. | Expenses. |
|-----------|---|-----------------------|
| 1915..... | {gold pesos... 364,924 paper pesos... 67,918,369 | 929,141 82,013,649 |
| 1916..... | {gold pesos... 1,267,374 paper pesos... 60,923,013 | 697,449 62,762,963 |
| 1917..... | {gold pesos... 1,273,313 paper pesos... 63,614,708 | 987,988 44,814,498 |

The expenses for 1916 and 1917 were divided as follows:

| Classes. | 1916 | | 1917 | |
|------------------|-------------|--------------|-------------|--------------|
| | Gold pesos. | Paper pesos. | Gold pesos. | Paper pesos. |
| Personal..... | 40,715 | 23,052,049 | 23,146 | 21,040,542 |
| Material..... | 129,154 | 21,525,556 | 105,447 | 17,812,503 |
| Public debt..... | 527,580 | 18,185,358 | 859,395 | 5,961,453 |
| Total..... | 697,449 | 62,762,963 | 987,988 | 44,814,498 |

PUBLIC DEBT.

EXTERNAL.

The recognized foreign debt of Paraguay consists of two foreign loans, which amounted at the end of 1918 to 5,544,472.30 gold pesos. The first of these is the London loan of 1871-72, which was contracted immediately after the conclusion of the disastrous war of López and the proceeds of which were to be used in the work of reconstruction. The first section of this loan made in 1871 amounted to £1,000,000, and the second section, made the next year, amounted to £2,000,000.

Both were to draw interest at 8 per cent. The first sold at 80 and the second at 85. It is said that not more than £200,000 of the proceeds of the two loans ever reached the National Treasury.

The newly organized Government was in no condition to meet its obligations on the loans and by 1874 they went into default. However, the next year the Government redeemed about £1,494,600 of the 1872 loan, leaving a principal of £1,505,400. For another decade the financial condition of the Government was very low. In 1878 it was unable to borrow \$50,000 from a bank and in 1882 it failed to secure a \$250,000 loan in Buenos Aires. Meanwhile, of course, the service on the bonds was suspended. In 1885 President Caballero sent his Minister of Foreign Affairs, José Segundo Decoud, to London for the purpose of making an arrangement with the English bondholders. An agreement was signed with the agents of the bondholders, whereby the actual principal of the debt was reduced to £850,000 in 2-4 per cent bonds. As an equivalent for the remainder of the debt the Paraguayan Government ceded to the English creditors 500 square leagues of public lands, equivalent to approximately 2,177,344 acres.

For the purpose of selling or developing these lands the Paraguay Land Co. (Ltd.) was created. The land was apportioned among the bondholders at the rate of 145 acres to each £100 of unpaid coupons. Land warrants of £100 each had been issued for each lot of 145 acres, and these were exchanged for £100 in shares of the land company, which was capitalized at £250,000. The land company also issued 61,710 5 per cent debentures, the proceeds of which were to be used to develop the properties. The lands assigned to the company have since been sold and the company liquidated.

For a few years the service on the loan was met with regularity, but in 1892 payments were again suspended. In 1896 a new arrangement was concluded between the Paraguayan Government and the bondholders on the following terms:

(1) Interest on the £850,000 of 1885 bonds to be paid at the following rates, commencing with the July, 1896, coupon: For the next three years at 1 per cent per annum; for the next three years at $1\frac{1}{2}$ per cent per annum; for the next three years at 2 per cent per annum; for the next three years at $2\frac{1}{2}$ per cent per annum; thenceforward till the extinction of the debt at 3 per cent per annum.

(2) Arrear coupons from July 1, 1892, to January 1, 1896, inclusive, to be funded at par into new bonds bearing the above rates of interest.

(3) A sinking fund of one-half per cent per annum to commence from January 1, 1900.

(4) As security the Paraguayan Government to assign the export duties on yerba, while reserving the right to increase, diminish, or suppress such duties; in the latter case some other tax to be assigned for the service of the debt. One-twelfth of the sum required for the annual service to be placed in the hands of the bondholders' agent at Asuncion on the first day of each month. In the event of the yield from the yerba duties being inadequate to provide the necessary amount, the deficiency to be made good by the Government. Any surplus to go into the amortization fund.

(5) In the event of the monthly payments being suspended for a period of 12 months, the bondholders to recover all their rights under the 1885 arrangement.

By the agreement of 1896 the total debt, including principal and interest, was fixed at £994,600, for which bonds were issued. The operation of the sinking fund since 1900 has resulted in the retirement of bonds to the following amounts:

| Years. | Bonds redeemed. | Average cost. | Years. | Bonds redeemed. | Average cost. |
|-----------|-----------------|------------------|------------|-----------------|------------------|
| 1900..... | £13,000 | 19 | 1911..... | £20,300 | 55 |
| 1901..... | 18,700 | 21 $\frac{1}{2}$ | 1912..... | 21,000 | 56 |
| 1902..... | 14,350 | 27 | 1913..... | 22,200 | 56 |
| 1903..... | 25,200 | 31 | 1914..... | 11,200 | 57 $\frac{1}{2}$ |
| 1904..... | 10,100 | 34 | 1915..... | None..... | ..... |
| 1905..... | 21,100 | 48 | 1916..... | 2,900 | 43 |
| 1906..... | 10,600 | 48 | 1917..... | 12,200 | 44 |
| 1907..... | 19,300 | 49 | 1918..... | None..... | ..... |
| 1908..... | 14,200 | 50 | Total..... | 290,350 | ..... |
| 1909..... | 18,300 | 50 $\frac{1}{2}$ | | | |
| 1910..... | 19,500 | 54 $\frac{1}{2}$ | | | |

Through the working of the sinking fund up to the opening of the European war the amount of the bonds has been reduced to £704,250.

The steady increase in the quotations of Paraguayan bonds in the above table shows the gradual improvement in the economic state of the country during the period in question. The maximum of 59 was reached shortly before the beginning of the war, though the bonds fell to 43 in 1916.

Conditions brought about by the war, resulting in a serious decline of revenue, made it impossible for the Government to keep its obligations in relation to the foreign debt. The situation since the outbreak of the war is thus described in the report of the Corporation of Foreign Bondholders for 1918: "Between July, 1914, and December, 1915, only four monthly installments of the debt service were paid, but in May, 1916, the full service of interest and amortization for one-half year was remitted. After this no further payments were made until January, 1918, when the Government resumed remittance. The January, 1918, coupon and the sinking fund corresponding to the half year ending July, 1913, are unpaid." The yearly service on the loan amounts to 178,086 gold pesos. Including the arrears of £31,691 on the 1918 coupons, the debt at the end of that year amounted to £735,941.

This debt is administered by the Corporation of Foreign Bondholders of London. The bondholders' representative in Asuncion is the Banco Mercantil del Paraguay.

The Government was authorized by a law of November 27, 1912, to contract an additional foreign loan to the extent of £1,250,000. The proceeds of this loan were to be employed largely in repairing the damage done to the country by the revolution of 1911-12. The loan, to the amount of £440,326, was privately issued in London in 1914. It bears interest at 5 per cent and provides for a 1 per cent accumulative amortization fund. According to the Executive decree of September 30, 1914, the annual service was to amount to 133,154 gold pesos. At the end of 1918 this debt amounted to 2,090,261 gold pesos, as against 3,454,212 pesos for the original London loan, or a total of 5,544,473 pesos. In 1918 117,109 pesos was remitted toward the annual service on this loan. The total ar-

rears of the Paraguayan Government in its service on the London loans amounted in August, 1919, to approximately 466,000 pesos, equivalent to the total prescribed service for about a year and a half, the yearly service on both loans calling for 311,240 pesos.

A debt to the Banco Nacional Argentino, which amounted to 68,227 gold pesos on December 31, 1918, was paid during 1919.

The unrecognized foreign debt of Paraguay consists of the Argentine and Brazilian indemnities which were levied by those countries on Paraguay at the end of the war of Lopez. However, this debt is not considered by the Paraguayan Government among its legitimate foreign obligations, and the debtor powers have virtually agreed not to press their claims so long as the payment of the indemnity would embarrass Paraguay in her efforts at internal reconstruction. Nevertheless, they refuse to make a formal renunciation of their claims, as Uruguay did in 1883, but appear to maintain their rights to the indemnity as a weapon against each other in case one of them should ever gain a preponderant influence in Paraguayan affairs. The indemnities in each case amount to about 10,000,000 gold pesos.

INTERNAL DEBT.

In his address to Congress in April, 1919, President Franco declared that the internal debt of the Government on December 31, 1919, was as follows:

| Items. | Gold pesos. | Paper pesos. |
|--|-------------|--------------|
| Unsecured Government obligations..... | 283,562 | 6,240,653 |
| Old warrants for payments..... | 276,929 | 9,516,090 |
| 6 per cent consolidations of 1915..... | 1,624,450 | 23,244,000 |
| Fractions of same..... | | 825,587 |
| Total..... | -2,139,941 | 39,826,330 |
| Less amortization by Banco Agricola..... | 95,158 | 6,692,875 |
| Remainder..... | 2,044,783 | 33,133,445 |

The budget for 1919 provided for the year's service on this debt 410,000 gold pesos and 3,000,000 paper pesos. The budget for 1920 placed the total of the 6 per cent consolidations at 1,485,750 gold pesos and 17,245,000 paper pesos. The latter budget provided for a total annual service on the internal debt amounting to 553,645 gold and 8,008,790 paper pesos. Of this sum 100,000 gold and 5,150,000 paper pesos is to be applied to the deficits carried over from previous budgets. In October, 1919, the Paraguayan Government borrowed 650,000 gold pesos from the Banco de la República for the purpose of satisfying some of its most urgent obligations, largely in connection with the foreign debt. The Government received for the amount drafts on London to the total of £130,000. At the beginning of November the State was debtor to the Banco de la República to the extent of the following amounts:

| | Gold pesos. |
|--|-------------|
| Debt in Argentine gold, at 10 per cent interest, payable quarterly..... | 880,000 |
| Debt of 8,000,000 Paraguayan paper pesos, at 12 per cent interest, payable quarterly, equivalent to about..... | 420,000 |
| Total..... | 1,300,000 |

At that time the salaries for nearly all Government employees were in arrears for between three and four months, the total arrears amounting to over 1,000,000 gold pesos. Imports were falling off, some sources of revenue had fallen far below the amounts anticipated in the budget for the year, and the financial situation of the Government was frankly critical. Furthermore, there must be included in the internal debt of the nation the obligations represented by the 125,000,000 pesos of paper money.

As a warning against the ill-considered financial policy that has several times led the Treasury into a deficit, President Franco said in his annual address to Congress in 1918: "The truth which every man in the Government should never forget for a moment is this, that the country is poor and its economic capacity small; consequently public and private expenditures should be moderate and in relation to that capacity."

MUNICIPAL FINANCES.

The revenues and expenses of the municipality of Asuncion for the years 1916 and 1917 were as follows:

| Years. | Revenues. | Expenses. |
|-----------|---------------------------|---------------------------|
| 1916..... | Paper pesos. 5,336,304 | Paper pesos. 5,032,560 |
| 1917..... | 5,998,860 | 5,729,876 |

The principal sources of revenue for 1917 were as follows:

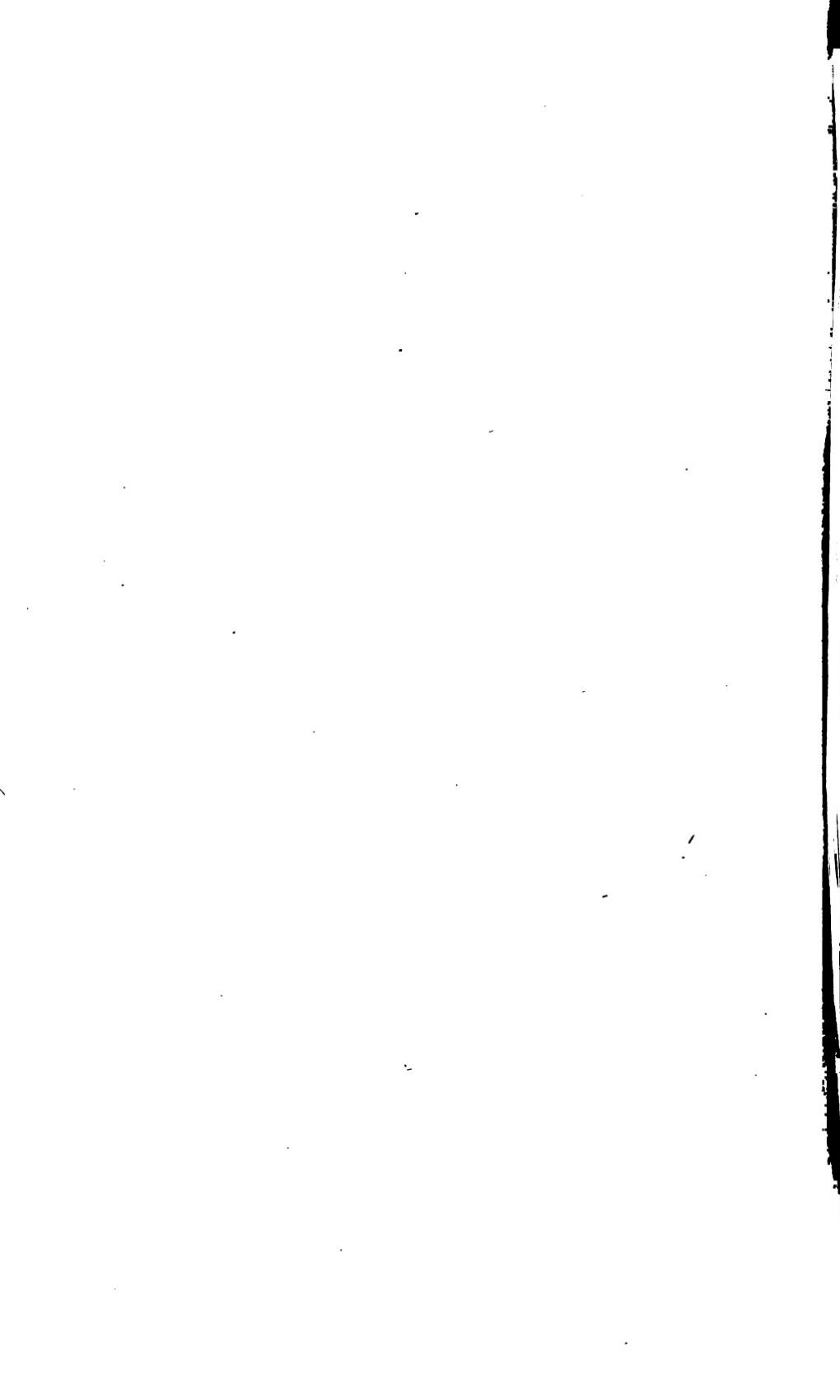
| | Paper pesos. |
|---|--------------|
| Commercial and industrial taxes and licenses..... | 1,860,280 |
| Market taxes..... | 1,035,336 |
| Lighting and street cleaning taxes..... | 964,535 |
| Tax on killing of cattle..... | 656,628 |

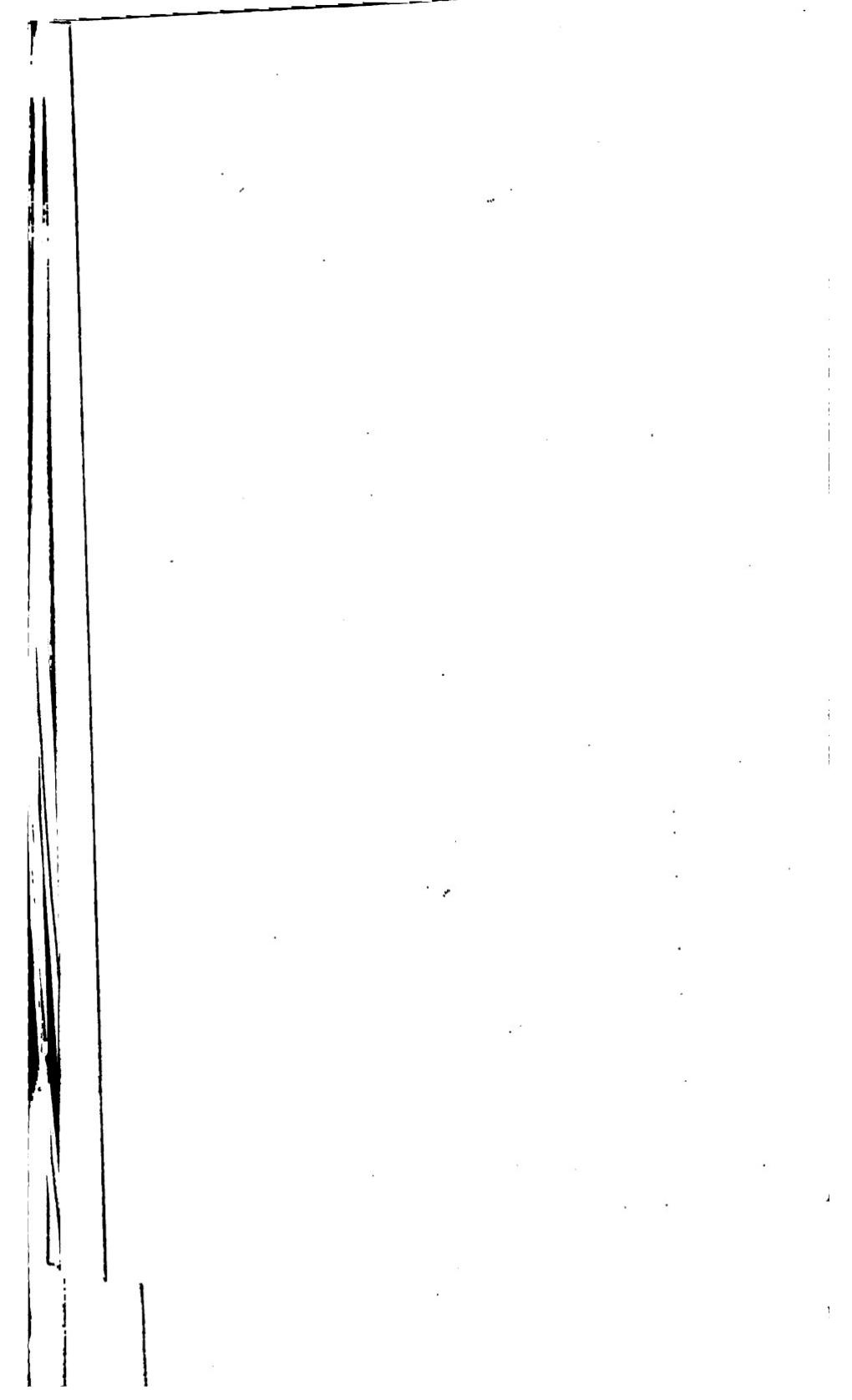
The public debt of the city amounted at the end of 1917 to 3,717,988 paper pesos.

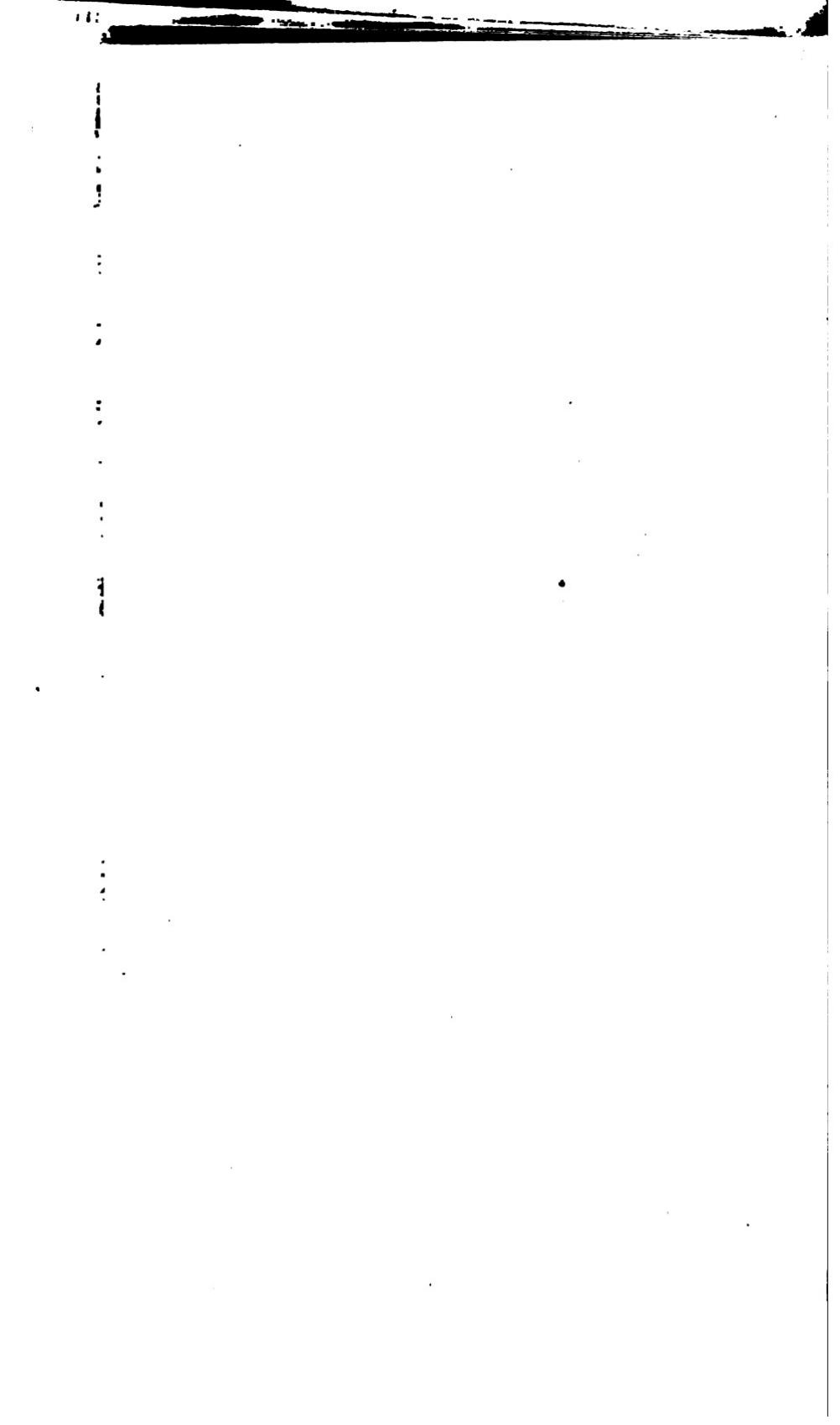
The total revenue and expenses of the towns of the second class during 1916 were as follows:

| Cities. | Revenues. | Expenses. |
|------------------|-------------------------|-------------------------|
| Concepcion..... | Paper pesos. 722,614 | Paper pesos. 733,040 |
| Encarnacion..... | 535,724 | 535,262 |
| Villa Rica..... | 497,754 | 483,743 |
| Paraguarí..... | 191,558 | 349,304 |

















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